

# Kundendienst-Handbuch Service Manual

## PERSONAL COMPUTER Tower AT 201/202/220

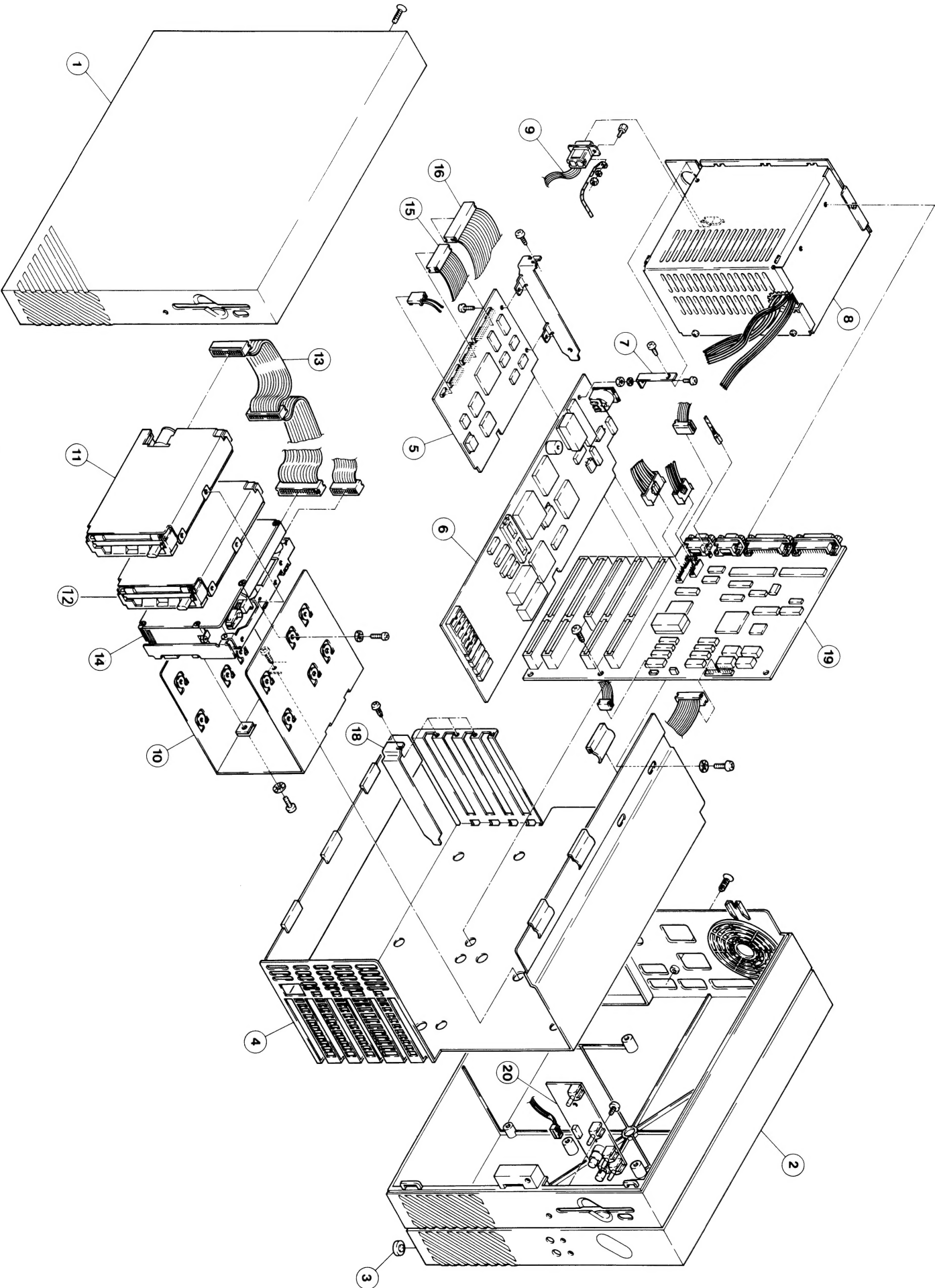


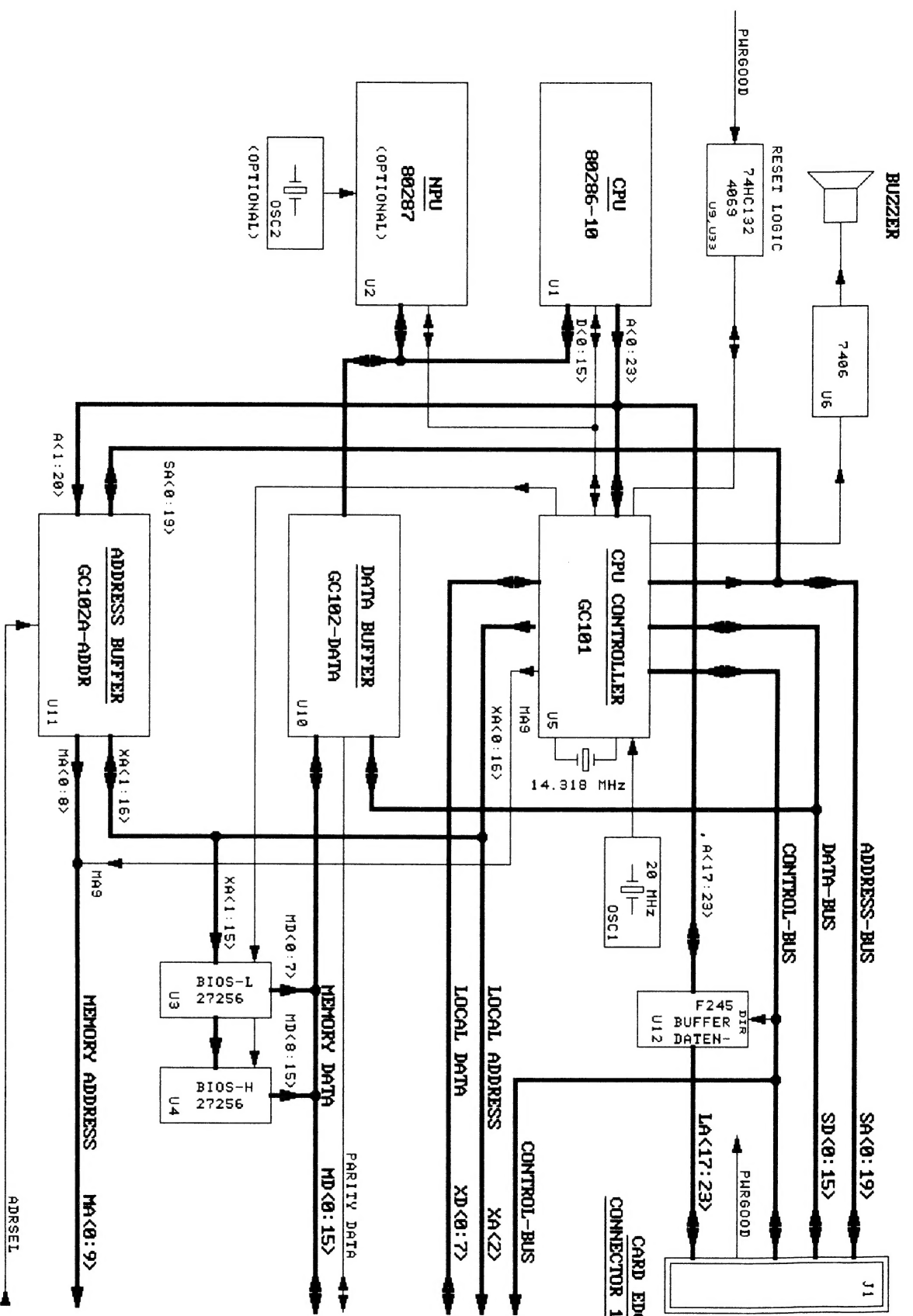
Ersatzteilliste für Tower AT 201/202/220  
Parts List for Tower AT 201/202/220

Bestell-Nr. Part.-No.	Bezeichnung	Description	Zeich.-Pos. Ref.-No.	Preisgruppe
50 467 00	FK System Tower	Box system tower		C 3
50 466 00	Sty-Verp. System Tower	Polyfoam system tower		C 3
50 495 00	FK Tastatur Tower	Box keyboard tower		C 2
50 496 00	Sty-Verp. Tastatur Tower	Polyfoam keyboard tower		C 2
50 481 00	Tastatur (D)	Keyboard (D)		F 6
50 482 00	Tastatur (F)	Keyboard (F)		F 6
50 202 00	Tastatur (DK)	Keyboard (DK)		F 6
50 203 00	Tastatur (I)	Keyboard (I)		F 6
50 204 00	Tastatur (N)	Keyboard (N)		F 6
50 485 00	Tastatur (S/SF)	Keyboard (S/SF)		F 6
50 206 00	Tastatur (P)	Keyboard (P)		F 6
50 214 00	Tastatur (GR)	Keyboard (GR)		F 6
50 484 00	Tastatur (GB)	Keyboard (GB)		F 6
50 483 00	Tastatur (E)	Keyboard (E)		F 6
50 486 00	Tastatur (CH)	Keyboard (CH)		F 6
50 097 00	Netzkabel (D)	Cord AC (D)		C 0
50 562 00	Netzkabel (GB)	Cord AC (GB)		C 0
50 617 00	Netzkabel (CH)	Cord AC (CH)		C 0
50 225 00	Gehäuse Oberteil Tower	Cabinet top	1	C 3
50 226 00	Gehäuse Unterteil Tower	Cabinet bottom	2	C 9
50 493 00	Gehäusefuß	Leg	3	A 5
50 172 00	Blechchassis Tower	Chassis metal	4	D 4
50 450 00	HD Controller 220 MFM	HD Controller 220 MFM	5	G 1
50 229 00	Platine Best. (D) Tower AT CPU	PCB (D) tower AT CPU	6	*
50 293 00	Haltewinkel CPU Leiterplatte	Angle CPU	7	A 9
50 215 00	Netzteil Tower 90W	Power supply tower 90W	8	G 8
50 448 00	Kabelbaum 9pol.	Cable 9-pol.	9	B 8
50 171 00	Floppyhalter	Bracket floppy	10	B 8
50 472 00	Floppy Laufwerk	Floppy disk drive	11, 12	G 7
50 221 00	Kabelbaum Floppy 26pol.	Cable floppy 26-pol.	13	B 7
50 473 00	Hard Disk Laufwerk	Hard disc drive	14	J 9
50 220 00	Kabelbaum 20pol.	Cable 20-pol.	15	B 9
50 223 00	Kabelbaum 34pol.	Cable 34-pol.	16	C 5
50 224 00	Blindblende	Plate blind	17	A 9
50 020 00	Blindblech	Plate blind	18	B 9
50 228 00	Platine Best. (D) Tower EGA I/O	PCB (D) tower EGA I/O	19	J 1

\*Preis auf Anfrage

Exploded view

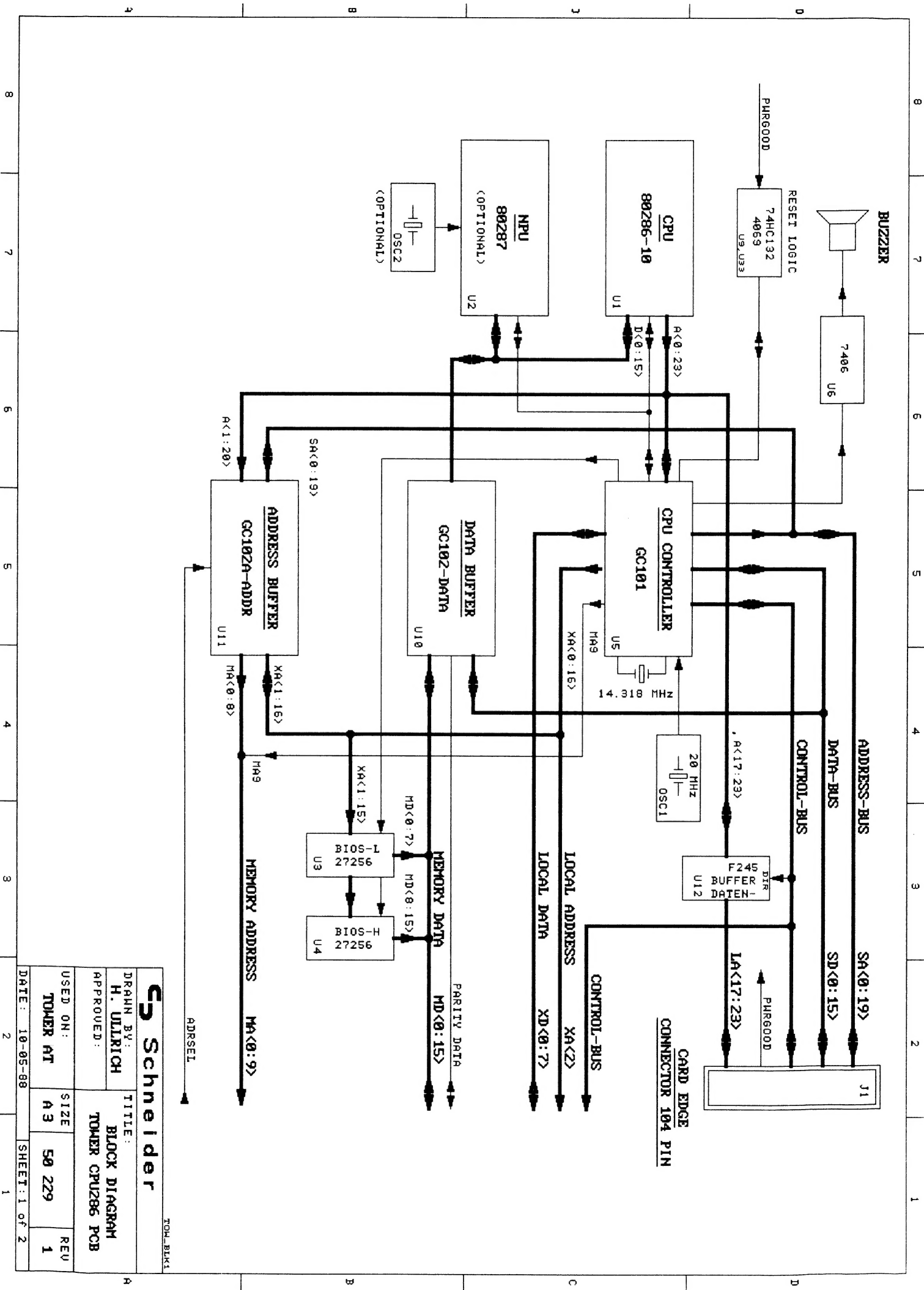




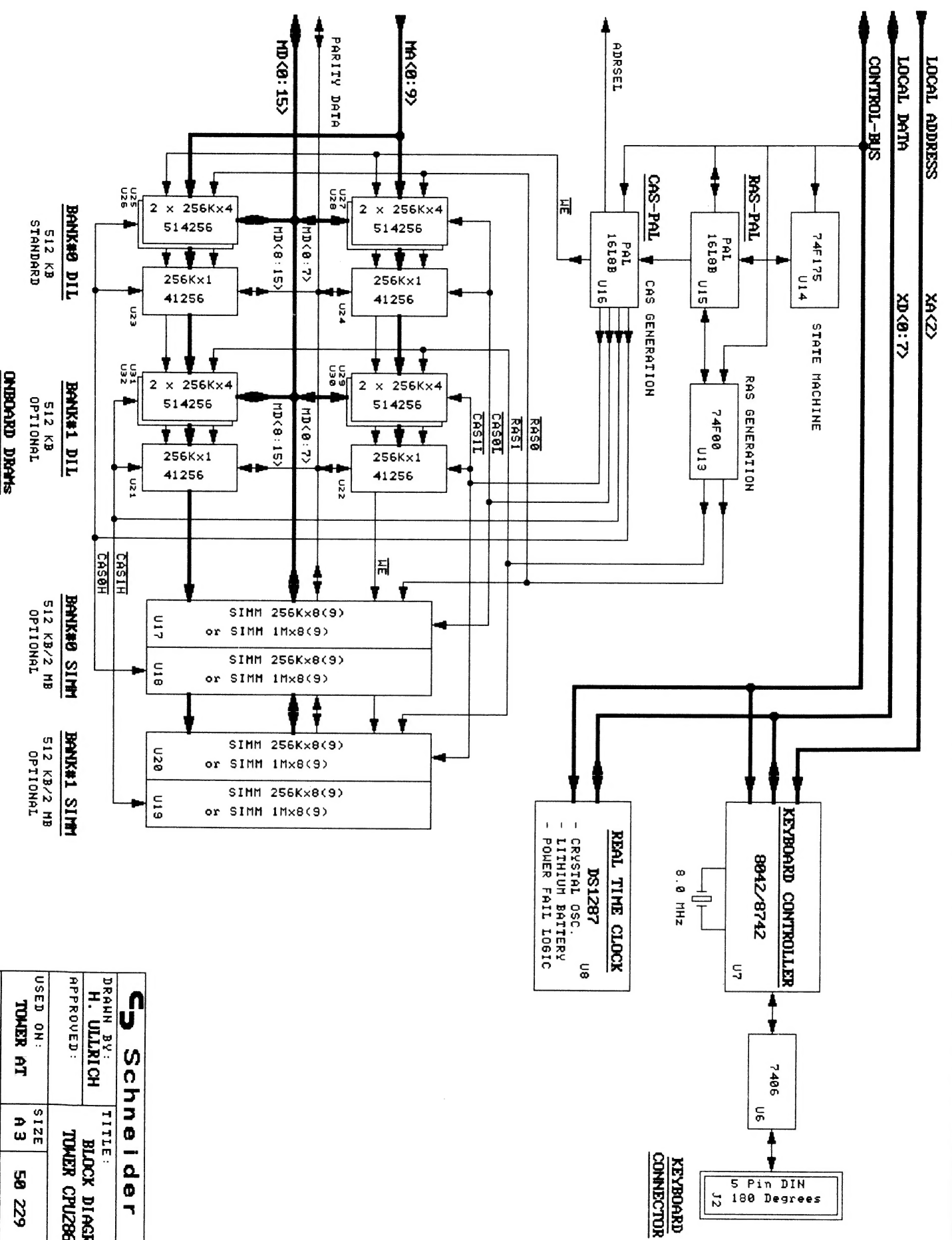
**Schneider**

DRAWN BY: H. ULLRICH  
 APPROVED: TOWER CPU286 PCB

USED ON: TOWER AT  
 SIZE: A3  
 DATE: 10-05-88  
 SHEET: 1 of 2








<b>Schneider</b>		<b>TOM-Block</b>	
DRAWN BY: H. ULLRICH	TITLE: BLOCK DIAGRAM	USED ON: TOMER AT	SIZE A3
APPROVED: TOMER AT	BLOCK DIAGRAM TOMER CPU286 PCB	DATE: 10-05-88	SHEET: 2 of 2
REU 1	50 229	1	1

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
1	ADVANCED ENGINEERING RELEASE	05-13-88	SCHLAGE
2		05-18-88	ASSMANN
3		06-01-88	SCHLAGE
4	First Layout	06-22-88	SCHLAGE
5	Layout REV 2	08-06-88	ASSMANN
6	Layout REV 2 CORRECTIONS	08-22-88	ASSMANN
7	PCB REV 2A FIX OF BUS 'MASTER'	08-31-88	ASSMANN
8	PCB REV 4. LAYOUT: ADDITIONAL RESET LOGIC ELIMINATED	10-27-88	ULLRICH

DRAWING FILES:	CONTENTS:
TDM_81.DWG	THIS SHEET
TDM_82.DWG	CPU SECTION
TDM_83.DWG	BIOS EPROMS
TDM_84.DWG	GC101
TDM_85.DWG	KEYBOARD / CLOCKS
TDM_86.DWG	REAL TIME CLOCK
TDM_87.DWG	ADDRESS / DATA BUFFERS
TDM_88.DWG	TIMING FOR MEMORY
TDM_89.DWG	MEMORY ON SIL- MODULE
TDM_810.DWG	MEMORY ON BOARD
TDM_811.DWG	CONNECTORS
TDM_812.DWG	BLOCK CAPS


**Schneider**

DRAWN BY:

H. ULLRICH

APPROVED:

TITLE:

SCHEMATICS  
Tower- CPU286

USED ON:

Tower-AT

DATE: 11-02-88

SHEET: 1 of 12

SIZE

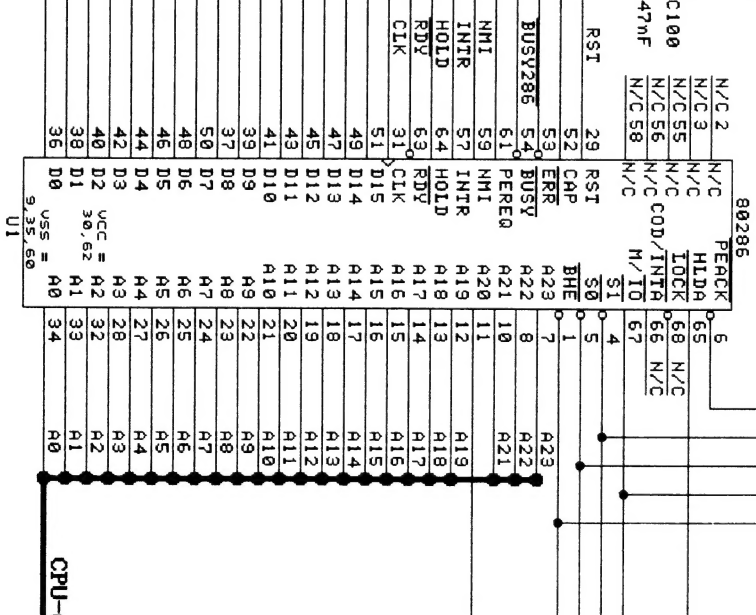
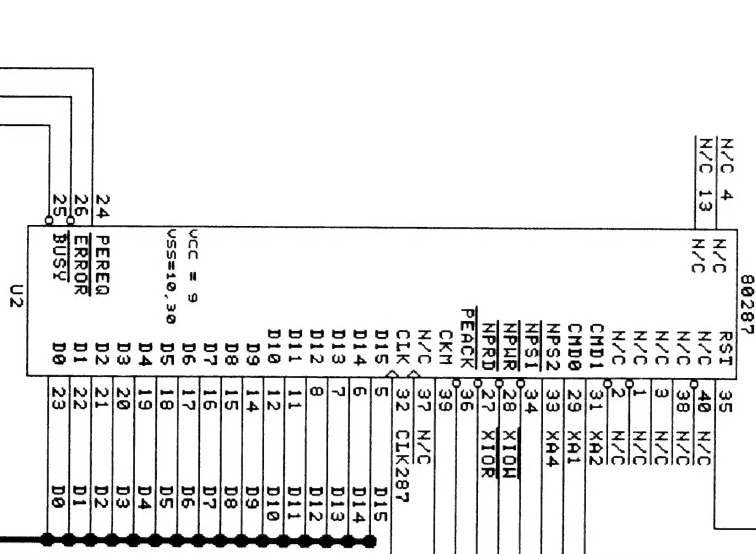
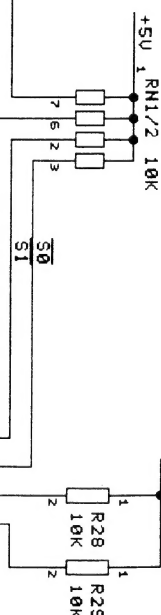
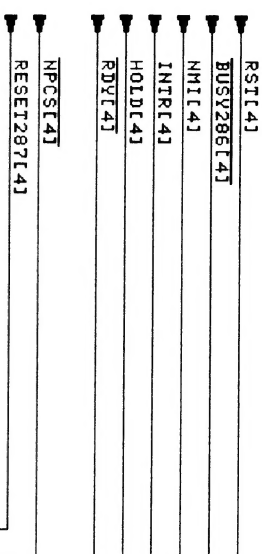
A3

50 229

REV

8

XA[0:23][3,4,5,7,8]



CPU-DATEN[0:15][7]

CPU-ADDR[0:23][4,7]

**Schneider**

DRAWN BY: B. ASSMANN

APPROVED: Tower-AT

TITLE: SCHEMATIC

Tower-CPU286

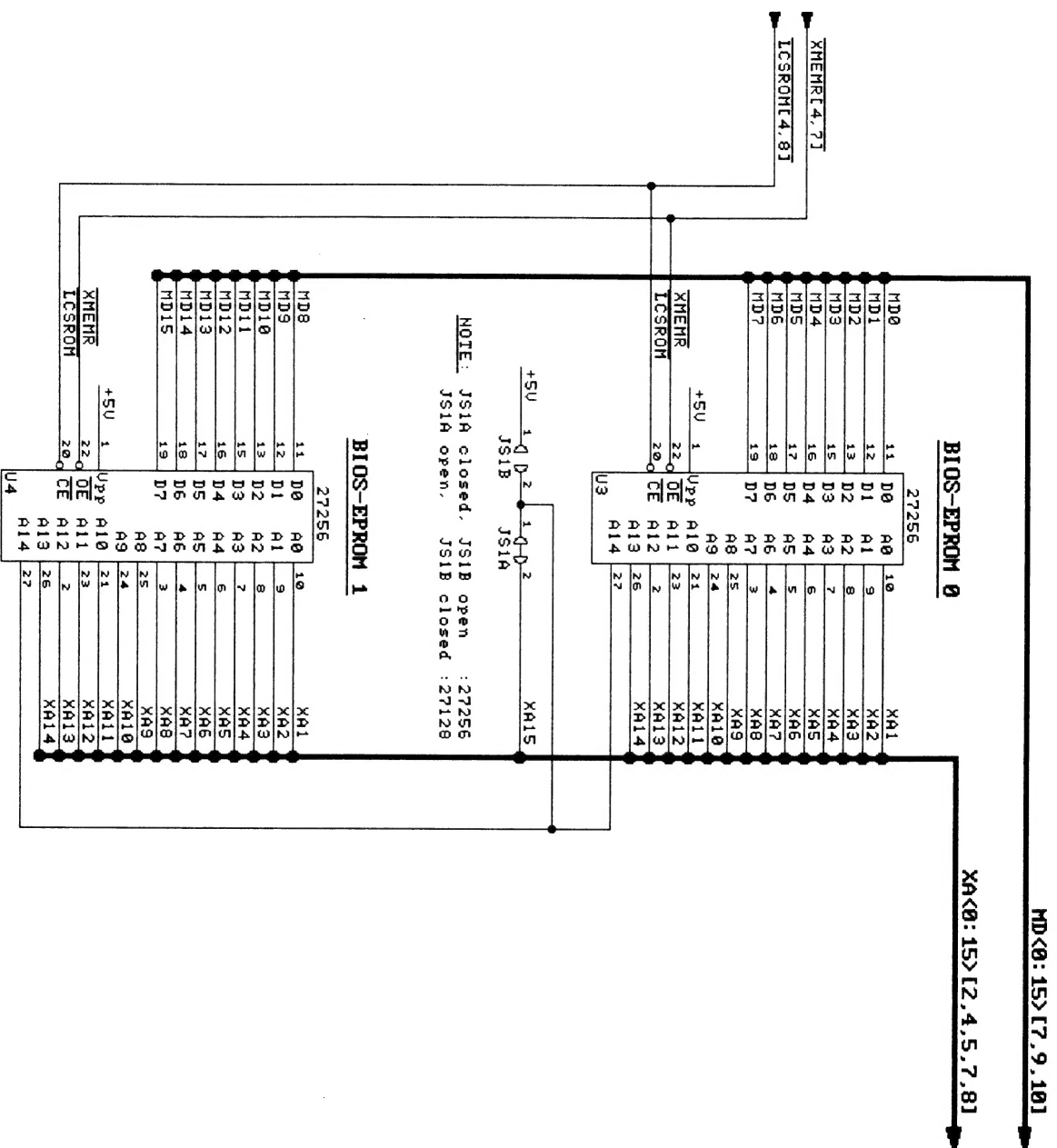
USED ON: Tower-AT

SIZE: A3

DATE: 11-02-88

SHEET: 2 of 12

REV: 8



**Schneider**

DRAWN BY:  
B. ASSMANN

APPROVED:

TITLE:  
SCHEMATIC  
Tower--CPU286

USED ON:

Tower--AT

SIZE  
A3

50 229

REV  
8

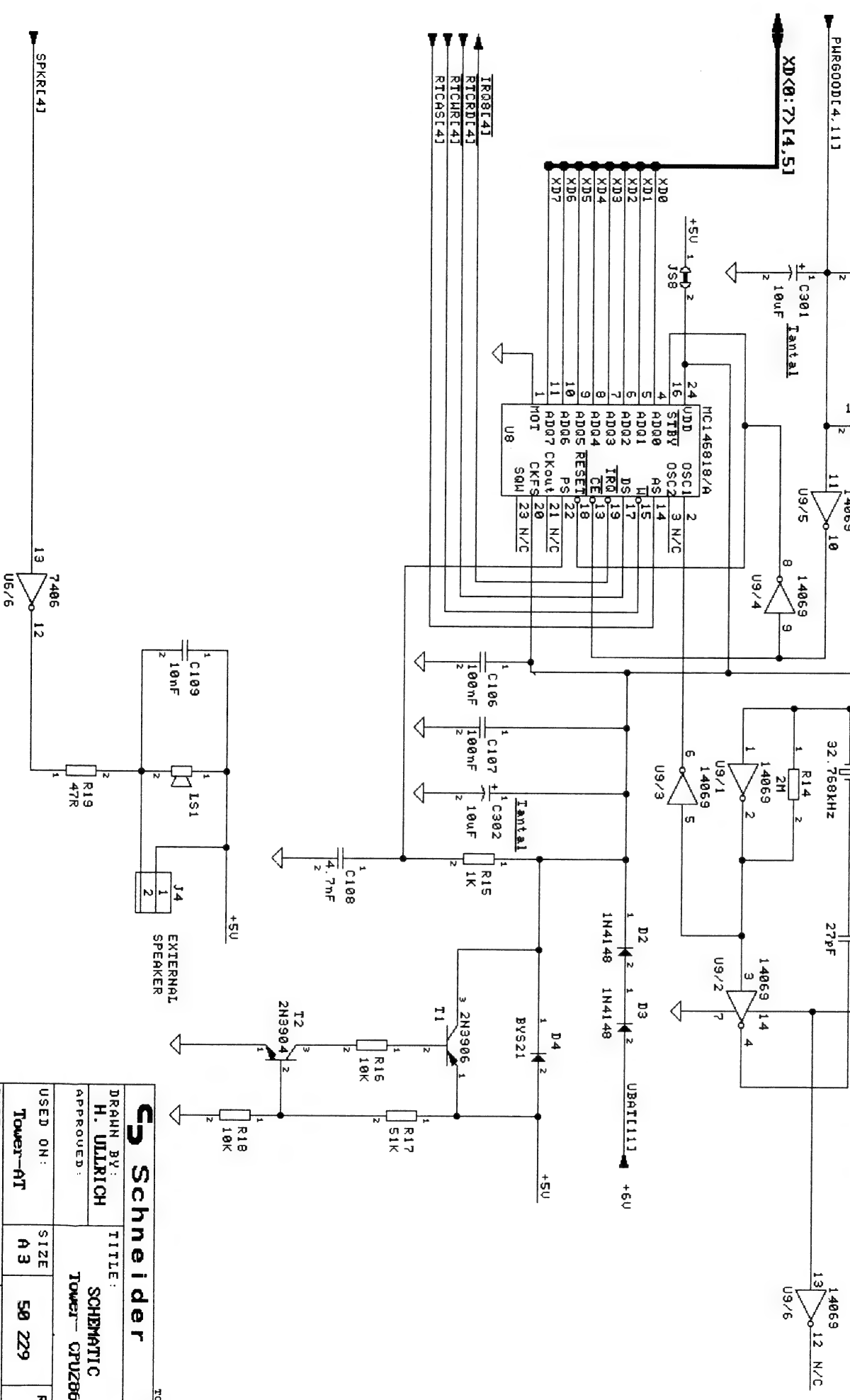
DATE: 11-02-88

SHEET: 3 of 12





**NOTE:**  
 For use with U8=MC146818, omit R13 and assemble Q3, R14, R16-R18, D4, T1, T2, C105, and C302.  
 D2 and D3 for optionally external battery.  
 For use with U8=DS1287, omit Q3, R14, R16-R18, D2, D3, D4, T1, T2, C105, and C302 and assemble R13.

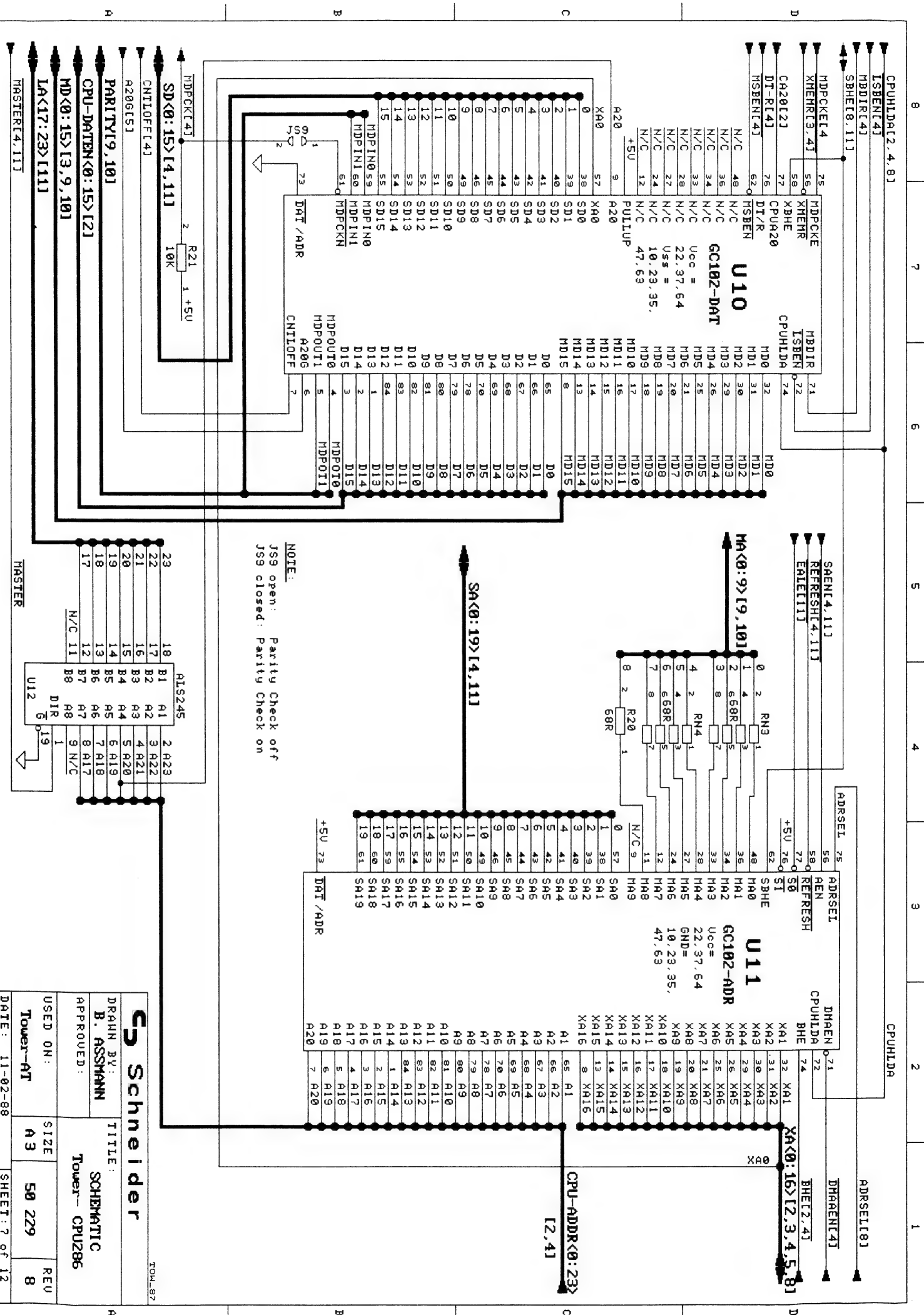


**Schneider**  
 TITLE: SCHEMATIC  
 Tower-AT

DRAWN BY: H. ULLRICH  
 APPROVED: Tower-AT

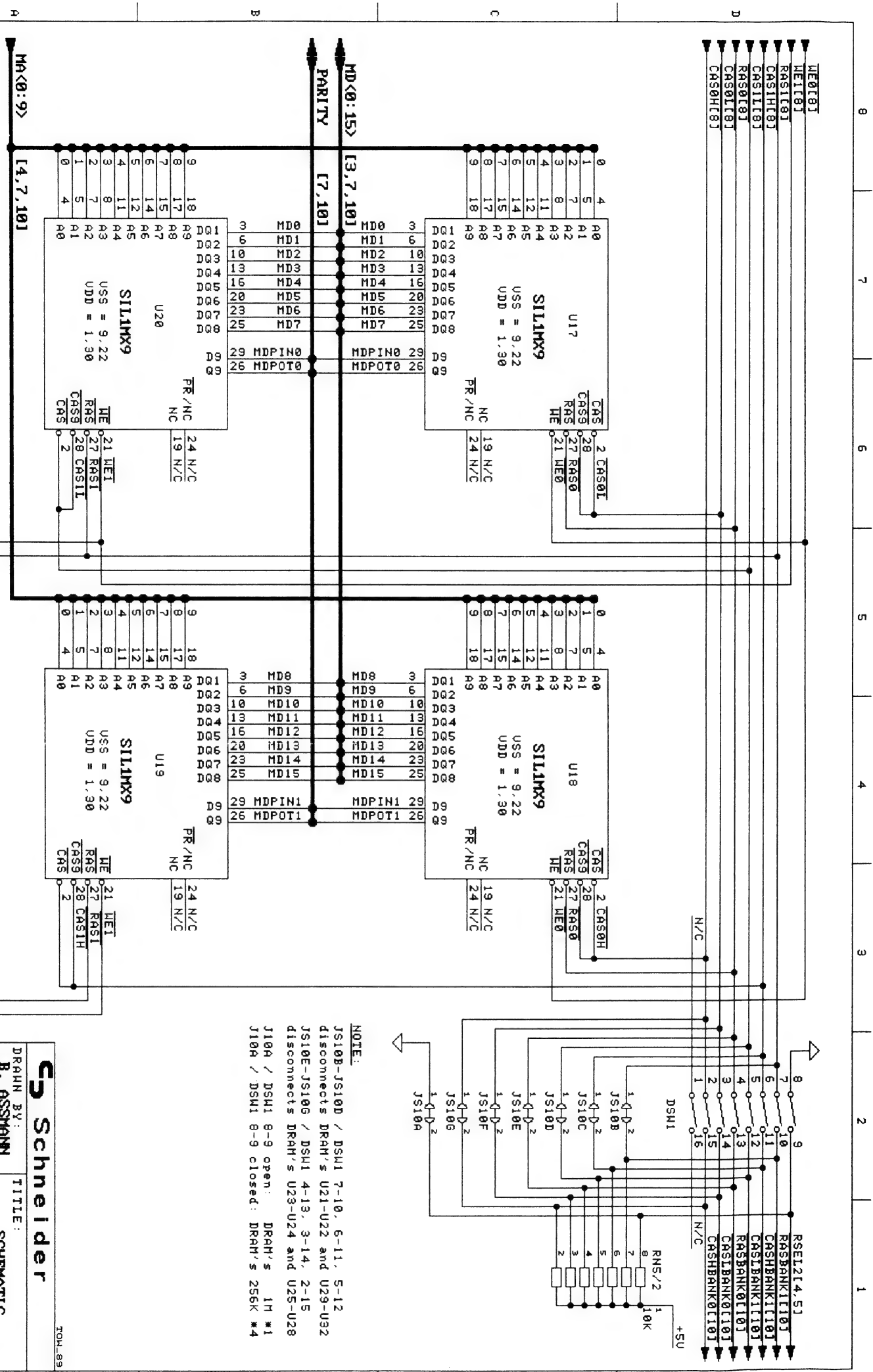
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 SIZE: A3  
 50 229  
 REV: 8

DATE: 11-02-88  
 SHEET: 6 of 12









**Schneider**

DRAMA BY:  
B. ASSMANN

APPROVED:

TITLE:  
SCHEMATIC  
Tower- CPU286

USED ON:  
Tower-AT

SIZE  
A3

50 229

REV  
8

DATE: 11-02-88

SHEET: 9 of 12

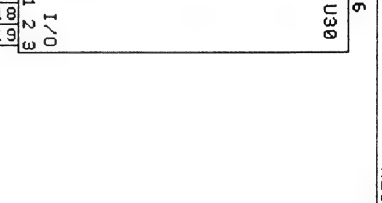
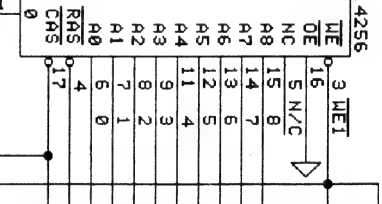
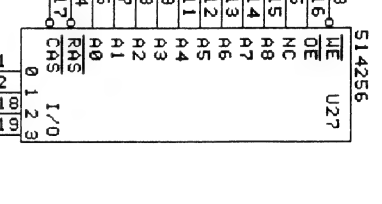
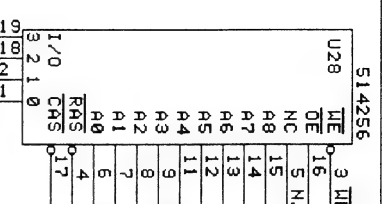
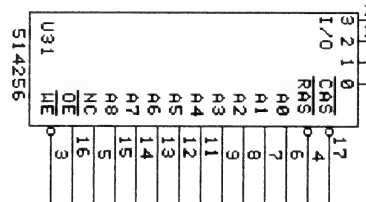
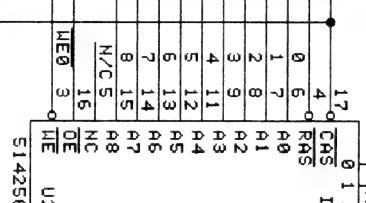
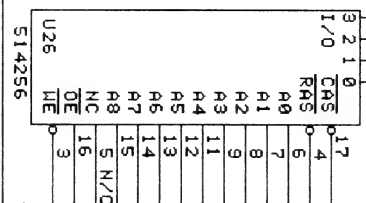
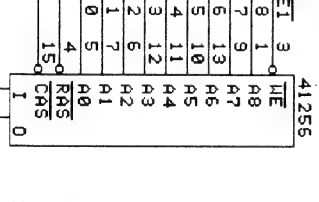
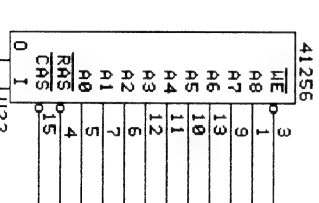
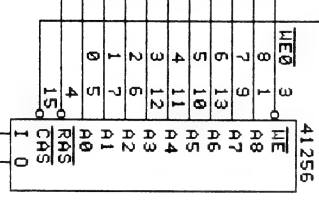
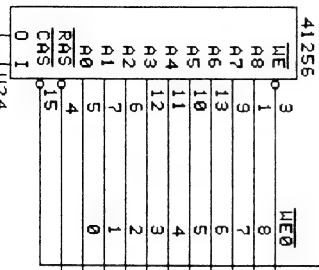
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ME0[8,9]

ME1[8,9]

MD<0:15>[3,7,9]

CASHBANK[0:9]  
RASHBANK[0:9]  
EASHBANK[0:9]

PARITY[7,9]  
MDPOT[0]  
MDPIN[0]

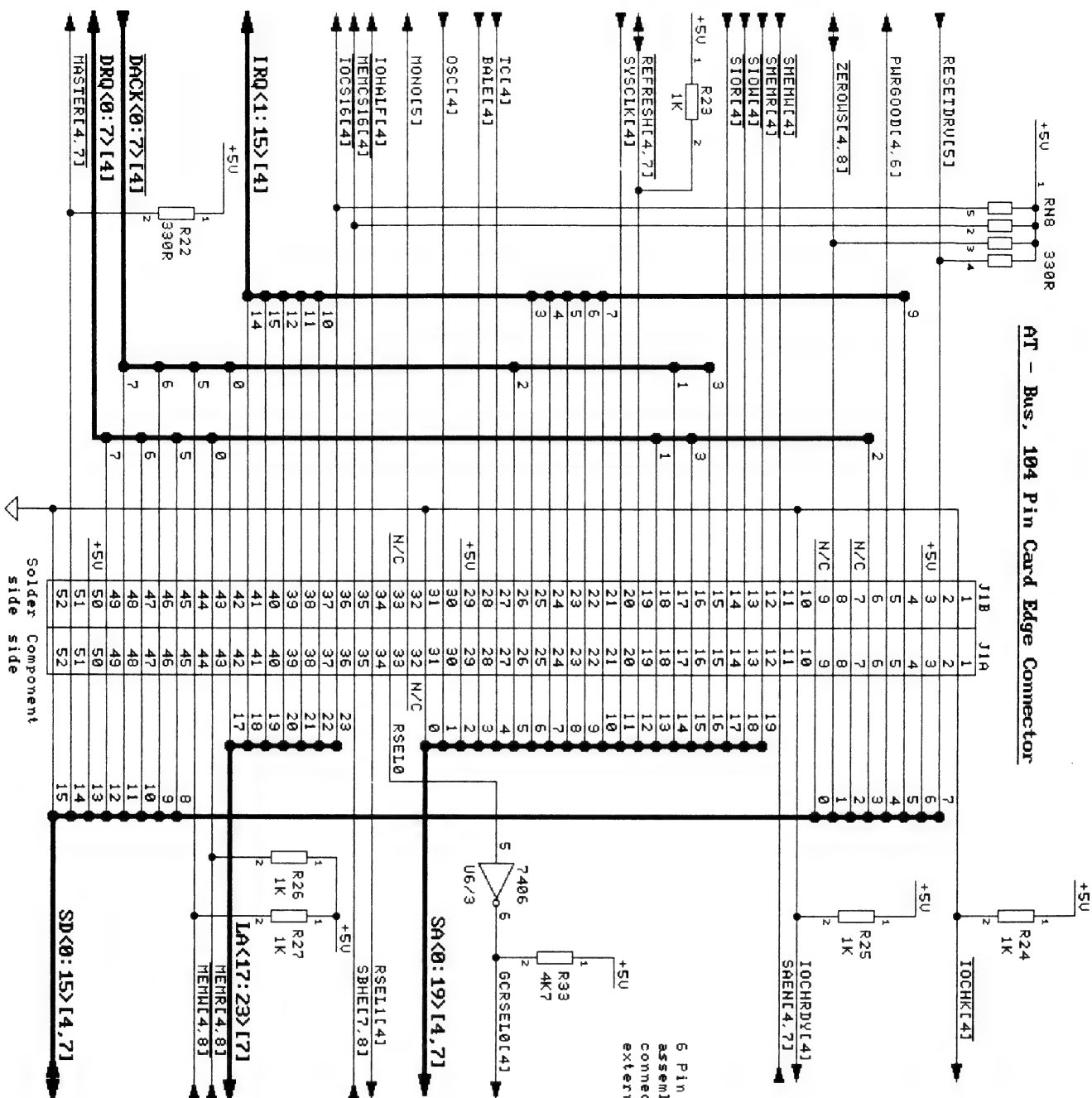


**Schneider**

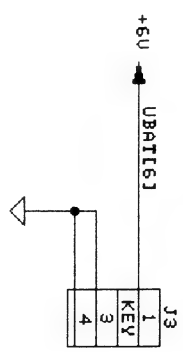
DRAWN BY: B. ASSMANN  
 APPROVED: [Signature]  
 TITLE: SCHMATIC Tower-CPU286

USED ON: Tower-AT  
 SIZE: A3  
 DATE: 11-02-88  
 SHEET: 10 of 12  
 REV: 8

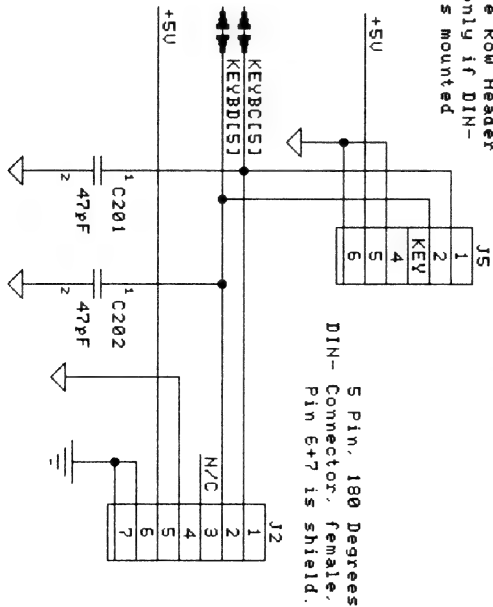
# AT - Bus, 104 Pin Card Edge Connector



## Battery- Connector +6V Single Row 4 Pin Header

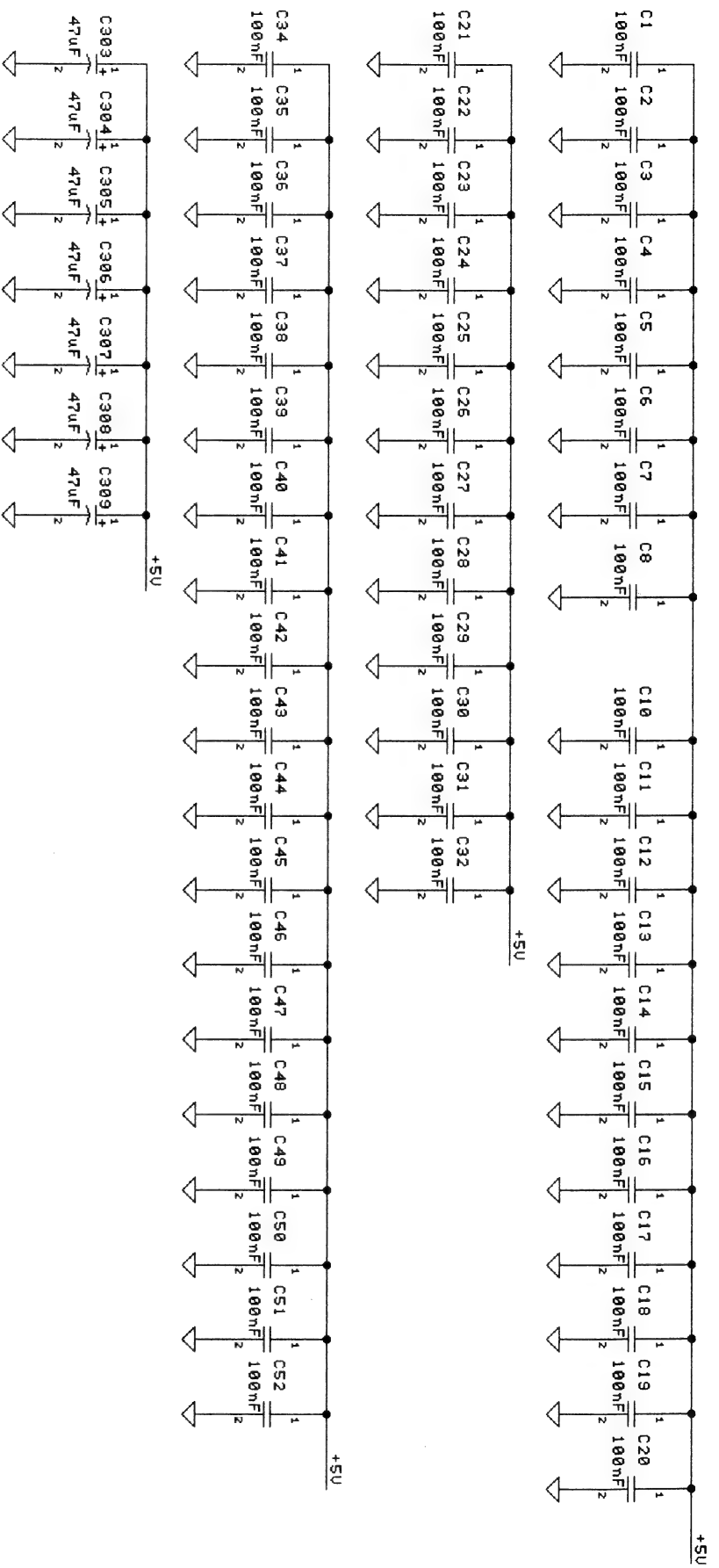


## Keyboard- Connector



## Schneider

DRAWN BY:		TITLE:	
H. ULRICH		SCHEMATIC	
APPROVED:		Tower- CPU286	
USED ON:		SIZE	REV
Tower-AT		A3	50 229 8
DATE: 11-02-88		SHEET: 11 of 12	



**Schneider**

DRAWN BY:  
**B. ASSMANN**

APPROVED:

TITLE:  
**SCHEMATIC  
Tower--CPU286**

USED ON:  
**Tower--AT**

SIZE  
**A3**

**50 229**

REV  
**8**

DATE: 11-02-88

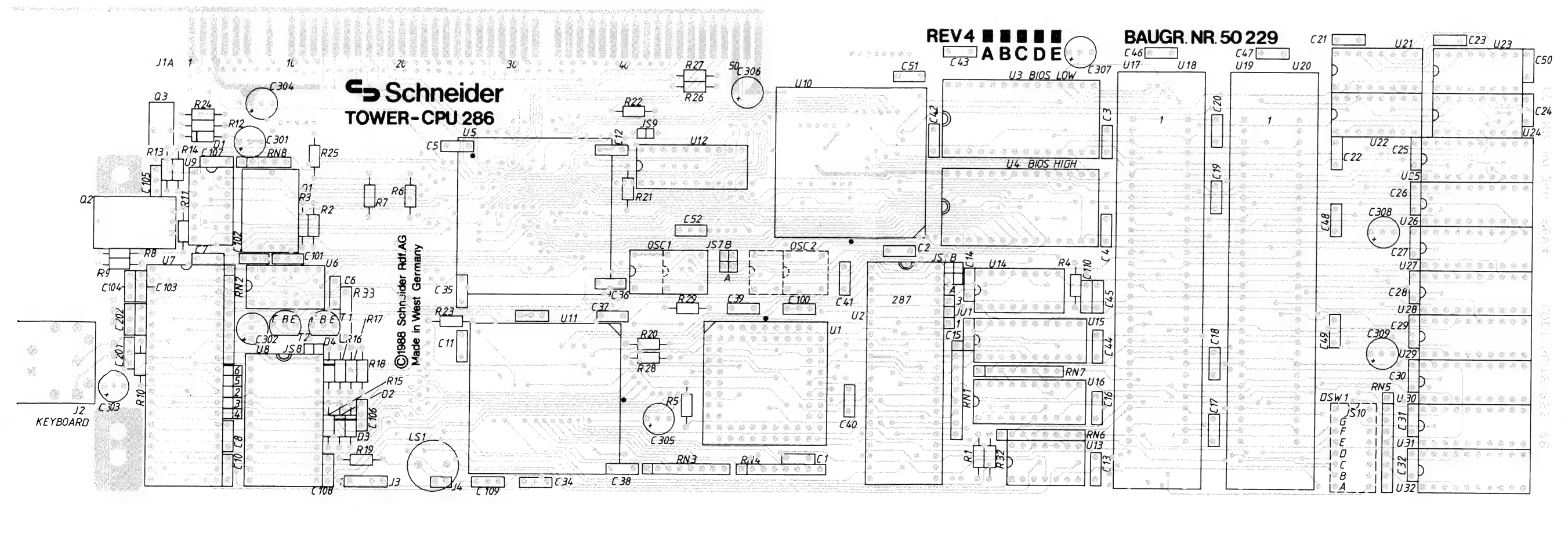
SHEET: 12 of 12

TOM-812

Ersatzteilliste für Platine Best. (D) Tower AT CPU  
Parts List PCB (D) Tower AT CPU

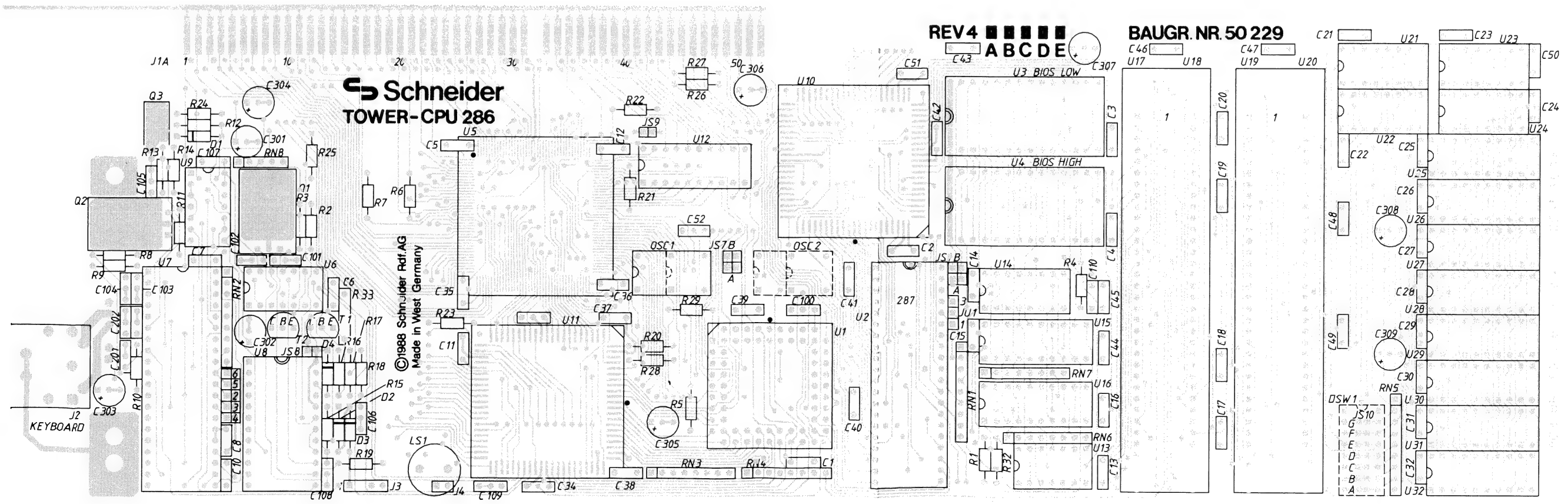
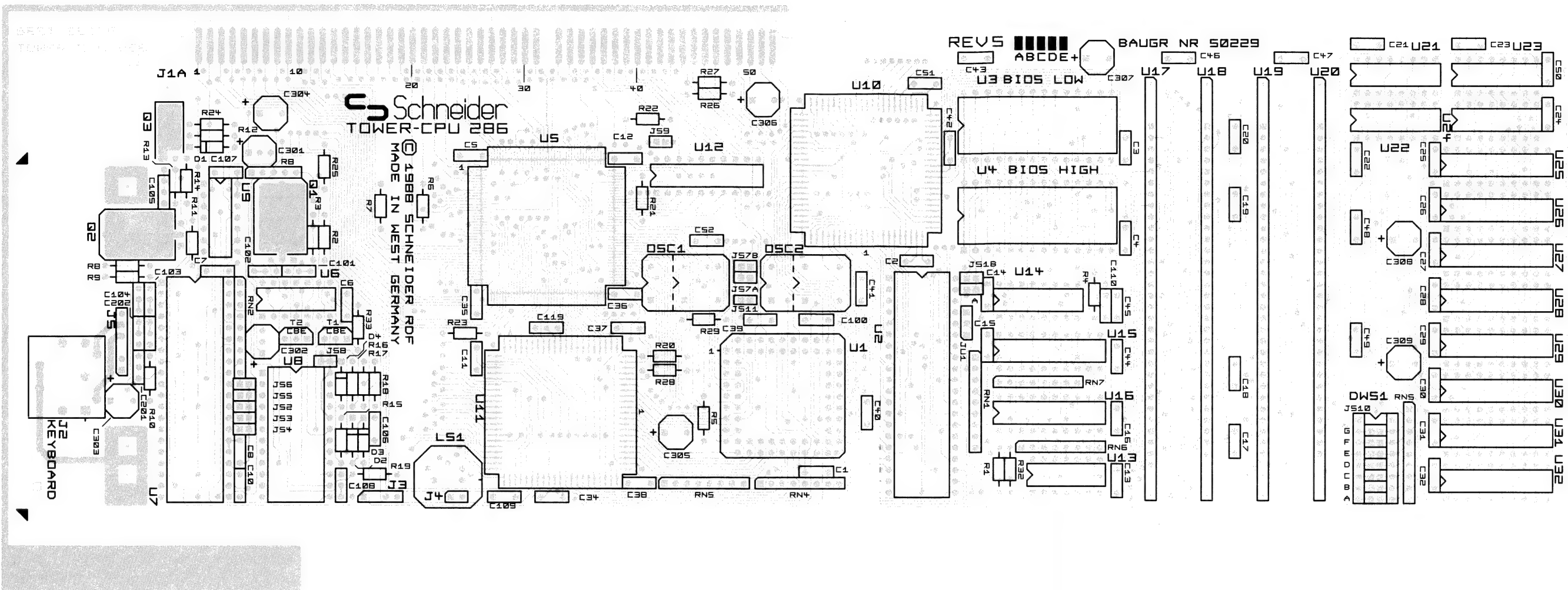
Bestell-Nr. Part.-No.	Bezeichnung	Description	Zeich.-Pos. Ref.-No.	Preisgruppe
50 115 00	IC 80286	IC 80286	U 1	F 4
50 444 00	IC EPROM 256K prog.	IC EPROM 256K prog.	U 3	C 9
50 445 00	IC EPROM 256K prog.	IC EPROM 256K prog.	U 4	C 9
50 047 00	IC GC 101C CPU Contr. (Rev. 4)	IC GC 101C CPU Contr. (Rev. 4)	U 5	F 5
50 776 00	IC GC 101D CPU Contr. (Rev. 5)	IC GC 101D CPU Contr. (Rev. 5)	U 5	F 5
50 122 00	IC 7406	IC 7406	U 6	A 7
50 243 00	IC 8042 prog.	IC 8042 prog.	U 7	C 3
50 177 00	IC DS 1287	IC DS 1287	U 8	D 4
50 323 00	IC MC 14069	IC MC 14069	U 9	A 3
50 045 00	IC GC 102 Data	IC GC 102 Data	U 10	D 7
50 046 00	IC GC 102A Address	IC GC 102A Address	U 11	D 7
50 249 00	IC 74 ALS 245	IC 74 ALS 245	U 12	B 1
50 123 00	IC 74 F 00	IC 74 F 00	U 13	A 3
50 242 00	IC 74 F 175	IC 74 F 175	U 14	A 8
50 334 00	IC PAL 16L8BCN RAS-PAL	IC PAL 16L8BCN RAS-PAL	U 15	B 8
50 333 00	IC PAL 16L8BCN CAS-PAL	IC PAL 16L8BCN CAS-PAL	U 16	B 8
50 160 00	IC DRAM 256x4	IC DRAM 256x4	U 25-28	F 4
50 379 00	IC 74 HC 132	IC 74 HC 132	U 33	A 5
50 338 00	Diode 1 N 4148	Diode 1 N 4148	D 1,5	A 0
50 325 00	Quarz 14,31818 MHz	Quarz 14.31818 MHz	Q 1	B 3
50 326 00	Quarz 8,0 MHz	Quarz 8.0 MHz	Q 2	B 0
50 327 00	Osz. 20,0 MHz	Osc. 20.0 MHz	OSC 1	C 0
50 345 00	Elko rad. 47µF/16V	CE 47µF/16V	C 303-309	A 2
50 344 00	Tantal 10µF/16V	CE 10µF/16V	C 301	A 4
50 381 00	Tantal 1µF/16V	CE 1µF/16V	C 310	A 3
50 316 00	R-Netzwerk 8x10K	Network 8x10K	RN 1,5	A 3
50 319 00	R-Netzwerk 8x4K7	Network 8x4K7	RN 2	A 3
50 382 00	R-Netzwerk 4x68R	Network 4x68R	RN 3, 4, 6, 7	A 2
50 331 00	R-Netzwerk 4x330R	Network 4x330R	RN 8	A 2
50 332 00	Summer	Buzzer	LS 1	A 8
50 181 00	Buchse Dioden 5 Pin	Socket Diode 5 Pin	J 2	A 5

### Soldering side



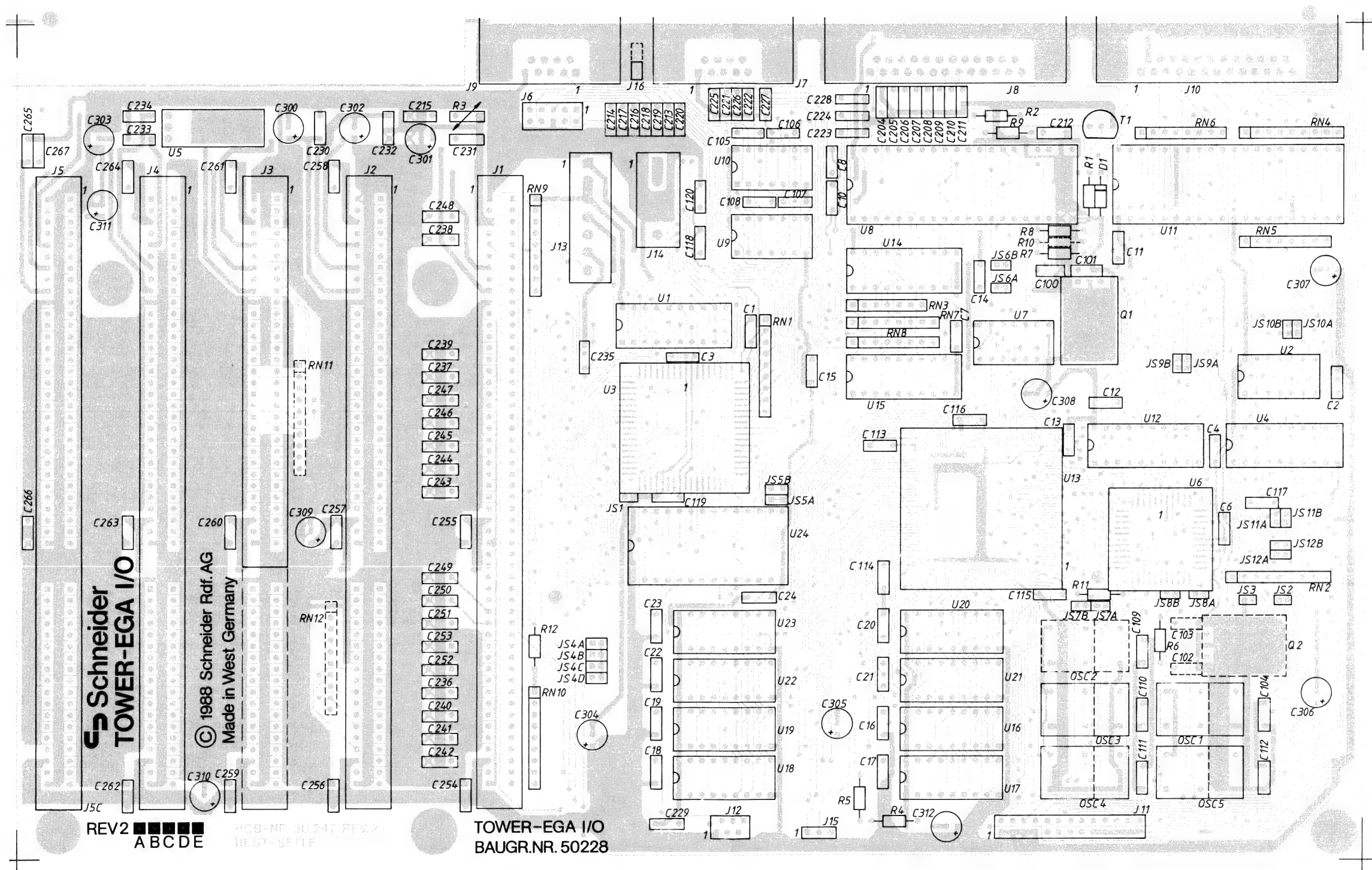


CPU  
Component side

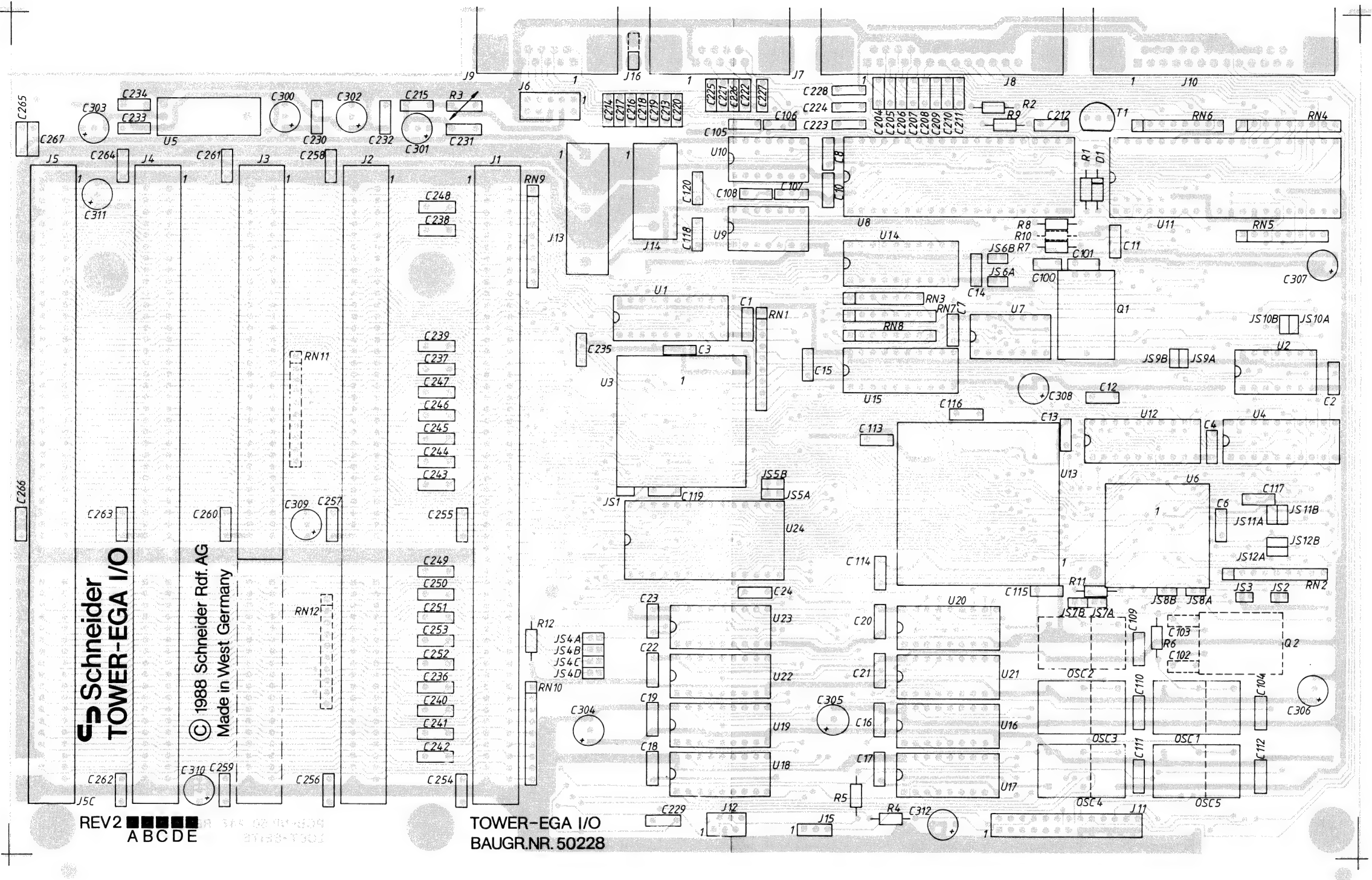




EGA I/O  
Component side

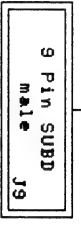
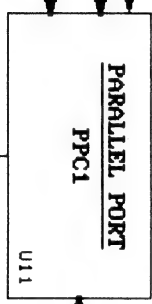
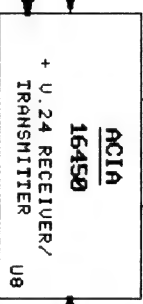
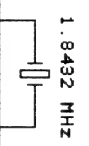
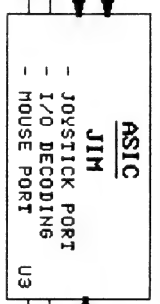
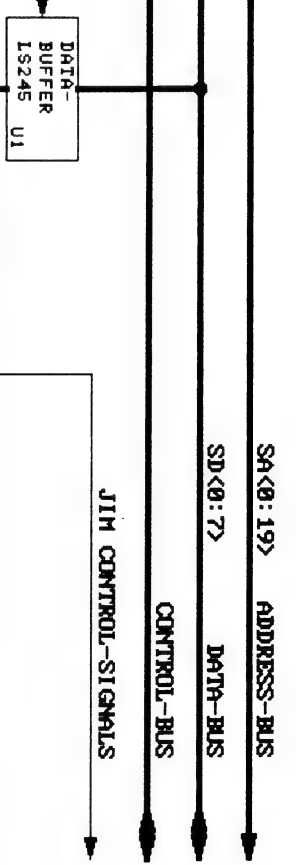
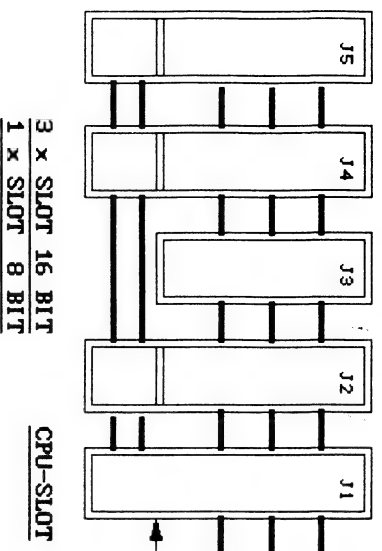


EGA I/O  
Soldering side

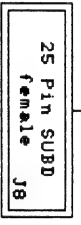


Ersatzteilliste für Platine Best. (D) Tower EGA I/O  
Parts List P.C.B (D) Tower EGA I/O

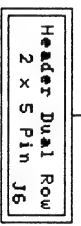
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50 129 00	IC 74LS245	IC 74LS245	U 1	A 7
50 237 00	IC 7407	IC 7407	U 2	A 8
50 101 00	IC JIM TC17 GO 22AT	IC JIM TC17 GO 22AT	U 3	C 7
50 311 00	IC PAL 16 L8A Peog.	IC PAL 16 L8A Prog.	U 4	B 4
50 238 00	IC 7905 (TO220)	IC 7905 (TO220)	U 5	A 6
50 105 00	IC WD 37 C65A-JM00	IC WD 37 C65A-JM00	U 6	D 5
50 240 00	IC 74 F 126	IC 74 F 126	U 7	A 9
50 169 00	IC 16 C 450 PC	IC 16 C 450 PC	U 8	C 9
50 120 00	IC MC 1488	IC MC 1488	U 9	A 4
50 121 00	IC MC 1489	IC MC 1489	U 10	A 4
50 106 00	IC PPC 1	IC PPC 1	U 11	C 2
50 239 00	IC 74 LS 237	IC 74 LS 237	U 12	A 6
50 147 00	IC GC-201	IC GC-201	U 13	F 2
50 125 00	IC 74 HC 373	IC 74 HC 373	U 14	A 8
50 241 00	IC 74 F 244	IC 74 F 244	U 15	B 0
50 110 00	IC DRAM 64Kx4 120ns	IC DRAM 64Kx4 120ns	U 16-23	D 4
50 447 00	IC EPROM 256K prog.	IC EPROM 256K prog.	U 24	C 9
50 338 00	Diode 1 N 4148	Diode 1 N 4148	D 1	A 0
50 358 00	Trans BC 337 B	Trans BC 337 B	T 1	A 2
50 312 00	Quarz 1,8432 MHz	Quarz 1.8432 MHz	Q 1	B 6
50 313 00	Osz. 16,0 MHz	Osc. 16.0 MHz	OSC 1	C 0
50 337 00	Osz. 34,0 MHz	Osc. 34.0 MHz	OSC 3	C 0
50 315 00	Osz. 24,0 MHz	Osc. 24.0 MHz	OSC 4	C 0
50 314 00	Osz. 19,2 MHz	Osc. 19.2MHz	OSC 5	C 0
50 365 00	Elko rad. 10µF/25V	CE 10µF/25V	C 300-303	A 2
50 345 00	Elko rad. 47µF/16V	CE 47µF/16V	C 304-312	A 2
50 316 00	R-Netzwerk 8x10K	R-Network 8x10K	RN 1	A 3
50 317 00	R-Netzwerk 8x1K	R-Network 8x1K	RN 2	A 3
50 320 00	R-Netzwerk 6x680K	R-Network 6x680K	RN 3	A 2
50 319 00	R-Netzwerk 8x4K7	R-Network 8x4K7	RN 4, 9, 10	A 3
50 318 00	R-Netzwerk 4x33R	R-Network 4x33R	RN 5-8	A 2
50 372 00	R-Netzwerk 9x10K	R-Network 9x10K	RN 11, 12	A 2
50 321 00	Widerstand PTC 0R75	Resistor PTC 0R75	R 3	B 0
50 178 00	Buchse Cardedge 104 Pin	Socket Cardedge 104 Pin	J 1	B 5
50 179 00	Buchse Cardedge 98 Pin	Socket Cardedge 98 Pin	J 2, 4, 5	B 3
50 180 00	Buchse Cardedge 62 Pin	Socket Cardedge 62 Pin	J 3	B 1
50 252 00	Stiftleiste RM 2,54 10pol.	Connector RM 2.54 10-pol.	J 6	A 2
50 132 00	Buchse SUB D 9 Pin	Socket SUB D 9 Pin	J 7	A 9
50 133 00	Buchse SUB D 25 Pin	Socket SUB D 25 Pin	J 8, 10	B 2
50 131 00	Buchse SUB D 9 Pin	Socket SUB D 9 Pin	J 9	A 9
50 139 00	Stiftleiste RM 2,54 26pol.	Connector RM 2.54 26-pol.	J 11	A 4



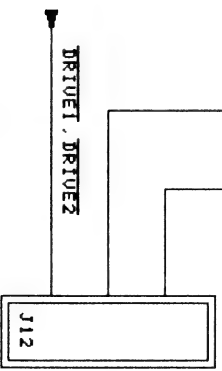
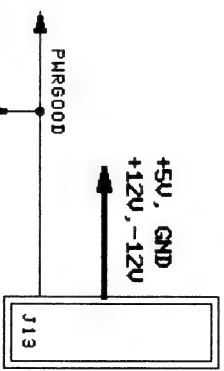
SERIAL PORT CONNECTOR



PARALLEL PORT CONNECTOR

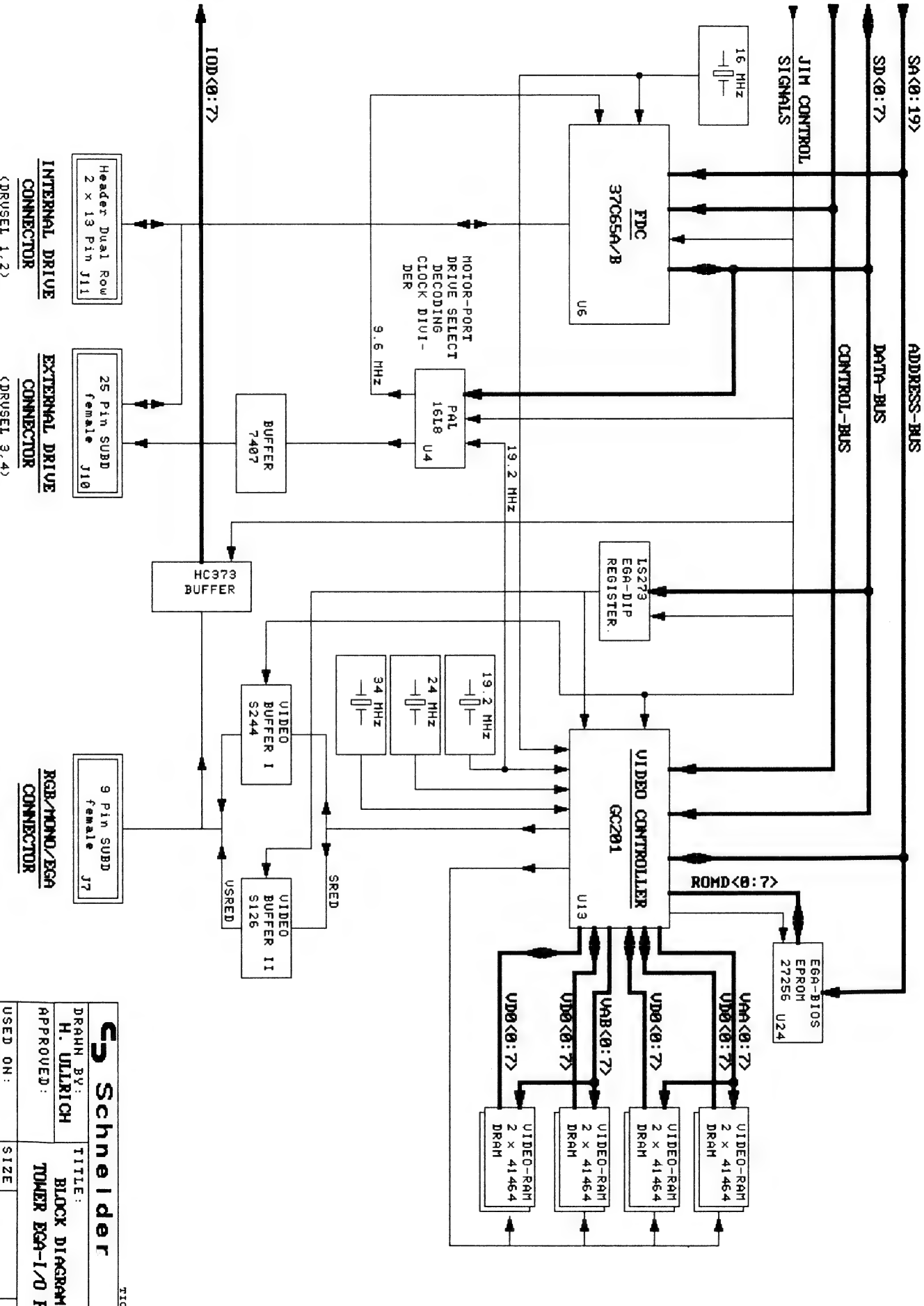


INTERNAL MOUSE CONNECTOR



DRIVE1, DRIVE2

<b>Schneider</b>			
DRAWN BY: H. ULLRICH		TITLE: BLOCK DIAGRAM	
APPROVED:		TOWER EGA-I/O PCB	
USED ON:	SIZE	REV	
TOWER AT	A3	S0 228	2
DATE: 09-29-88		SHEET: 1 of 2	



**Schneider**

DRAWN BY: H. ULLRICH

TITLE: BLOCK DIAGRAM  
TUMER EGA-1/0 PCB

APPROVED: TUMER AT  
USED ON: TUMER AT

DATE: 09-29-88

SIZE: A3  
SHEET: 2 of 2

REV: 2



REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
1	ADVANCED ENGINEERING RELEASE	04-27-88	RME
2	UPDATE	05-04-88	RME
3	UPDATE	05-24-88	RME
4	UPDATE, CORRECTIONS, ADDED BLOCK CAPS	06-22-88	H. ULLRICH
5	NEW LAYOUT (PCB REV.2)	07-11-88	RME
6	CHANGED 2 SIGNAL NAMES, ADDED PAGE REFERENCES	08-10-88	H. ULLRICH
7	CHANGED R8 VALUE TO 1K, ADDED C268 (C268 IS NOT INCLUDED IN THE LAYOUT OR SILSCREEN BUT AN ADDON REMARK!)	09-15-88	H. ULLRICH
8	ADDED C121 (NOT INCLUDED IN LAYOUT OR SILSCREEN - ADD-ON REMARK!) BUG FIX FOR VC-001 VIDEO CHIP	11-18-88	B. ASSMANN

DRAWING FILES:      CONTENTS:

TI0_81.DWG	THIS SHEET
TI0_82.DWG	ASIC JIM
TI0_83.DWG	FLOPPY INTERFACE
TI0_84.DWG	SERIAL INTERFACE
TI0_85.DWG	PARALLEL INTERFACE
TI0_86.DWG	VIDEO CONTROLLER
TI0_87.DWG	VIDEO RAM, CHAR. ROM
TI0_88.DWG	VIDEO INTERFACE
TI0_89.DWG	CONNECTORS I
TI0_810.DWG	CONNECTORS II
TI0_811.DWG	CPU SLOT
TI0_812.DWG	NORMAL SLOT
TI0_813.DWG	NORMAL SLOT
TI0_814.DWG	NORMAL SLOT
TI0_815.DWG	NORMAL SLOT
TI0_816.DWG	BLOCK CAPS, SPARE GATES

**Schneider**

TI0-81

DRAWN BY:  
B. ASSMANN

APPROVED:

TITLE:

SCHEMATIC  
TOWER-BGA/10

USED ON:

TOWER-AT

SIZE

A3

REV

8

DATE: 11-18-88

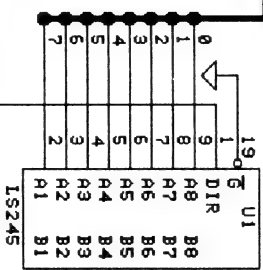
SHEET: 1 of 16

# I/O-CHIP SELECT GENERATION, JOYSTICK/MOUSE INTERFACE

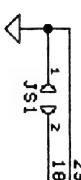
SA<0:9>[3-7,11-15]

IOD<0:7>[4-6,8]

SD<0:7>[3,6,11-15]



STOR3,11-15  
STOR3,11-15  
SAEN16,11-15  
RESETDRU  
[3,4,11-15]  
SYSCLK11-15



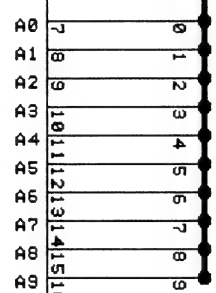
TODIR

BACK<2>[11-15]

REFRESH16,11-15

MI6[3,6]

COMINT14  
COMOUT14



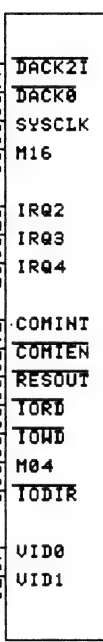
XA/DN  
XB/UP  
YA/LE  
YB/RI  
BR/FI  
BH/JI  
BL/IL

MUXHJ

SMDRU

CS-COM1  
CS-LPT1  
CS-FDC1  
CS-LDOR1  
CS-LDOR2  
DACK20  
CS-RT1  
CS-AUX1

MONCLK  
TIDEN  
URESET  
MONNCOL



DACK21  
DACK0  
SYSCLK  
MI6

IRQ2  
IRQ3  
IRQ4

COMINT  
COMEN  
RESOUT  
TORD  
TORD  
M04  
TODIR

VID0  
VID1  
VID2

RES11[11]  
RES10[11]

TOR-DIV14  
TOR-DIV15  
RESOUT14-61



XA/DN[9]  
XB/UP[9]  
YA/LE[9]  
YB/RI[9]  
BR/FI[9]  
BH/JI[9]  
BL/IL[9]

NOTE: C119 IS A BLOCK CAP FOR U3

IOHALF[11]

CS-COM1  
CS-LPT1  
CS-FDC1  
CS-LDOR1  
CS-LDOR2  
DACK20  
CS-RT1  
CS-AUX1

MONCLK  
TIDEN  
URESET  
MONNCOL



Schneider

DRAWN BY:  
B. ASSMANN

APPROVED:

USED ON:

TIMER-AT

SCHMATIC  
TIMER-EGA/10

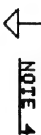
SIZE  
A3

50 228

REV  
8

DATE: 11-10-88

SHEET: 2 of 16

[illegible]

```
JS2 OPEN : 125 ms
JS2 CLOSED: 187 ms
```

```

2) JS3 SELECTS 2 SPEED SPINDLE DRIVE IF CLOSED
3) J15 SELECTS RPH POLARITY

```

JUMPER IN POS. 1-2: 1.2MB OR AT TYPE 1.44MB  
JUMPER IN POS. 2-3: PS/2 TYPE 1.44MB

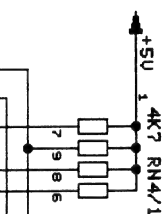
4) C104 IS BLOCK CAP TO OSC1  
5) Q2, C102, C103 ONLY REQUIRED IF JS0A OPEN, JS0B CLOSED

**T10-83**



# SERIAL INTERFACE

COMOUT[2]  
COMINT[2]



RESEIDRUC[2,3,11-15]  
RESOUT[2,5,6]

10D<0:7>[2,5,6,8]

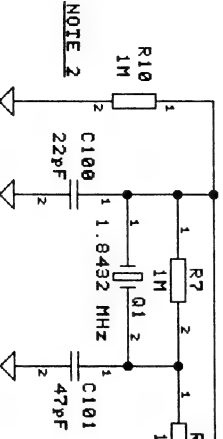
0 1 2 3 4 5 6 7  
D0 D1 D2 D3 D4 D5 D6 D7

SA<0:2>[2,3,5-7,11-15]

19 DOSTR 22 DISTR 25 ADS 28 A0 UCC=40 27 A1 GND=20 26 A2

CS-COM[2]  
10H-DIV[2]  
10R-DIV[2]

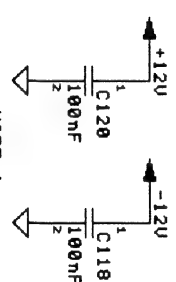
14 CS2 18 DOSTR 21 DISTR 16 XTAL1 17 XTAL2 9 CLK BAUDOUT U8



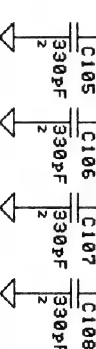
NOTE 2

NOTES: 1) C118 AND C120 ARE  
BLOCK CAPS FOR U9

2) R10 ASSEMBLED ONLY IF  
REQUIRED



NOTE 1



**Schneider**

TIO-84

DRAWN BY:  
H. ULRICH

APPROVED:

TITLE:  
SCHEMATIC  
TOWER-BGA/10

USED ON:  
TOWER-AT

SIZE  
A3

REV  
8

DATE: 11-18-88

SHEET: 4 OF 16

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---



**T10-85**

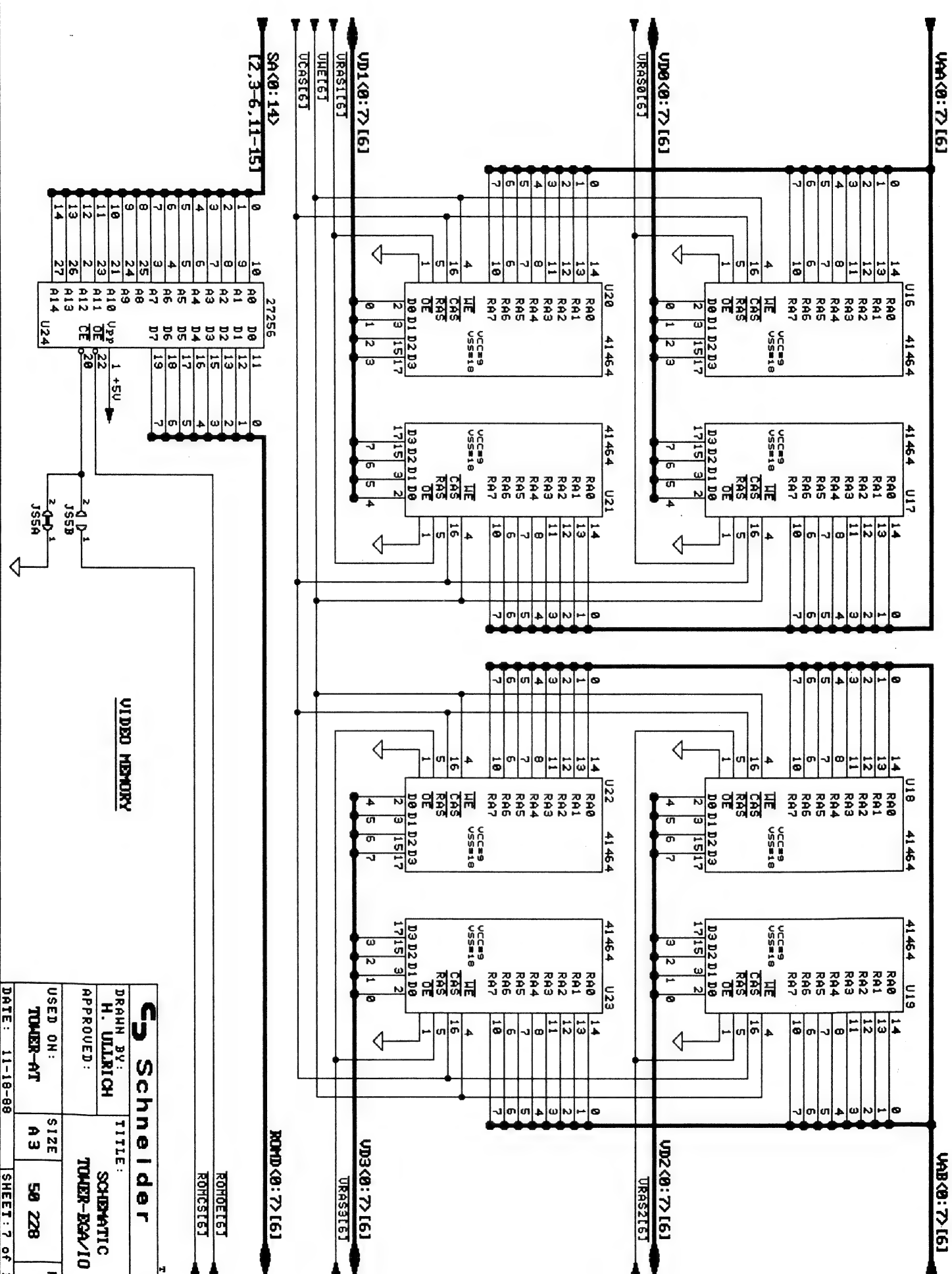
**TITLE:**

**SCHEMATIC  
TOWER-BGA/10**

88

**SHEET: 5 of 16**





VIDEO MEMORY

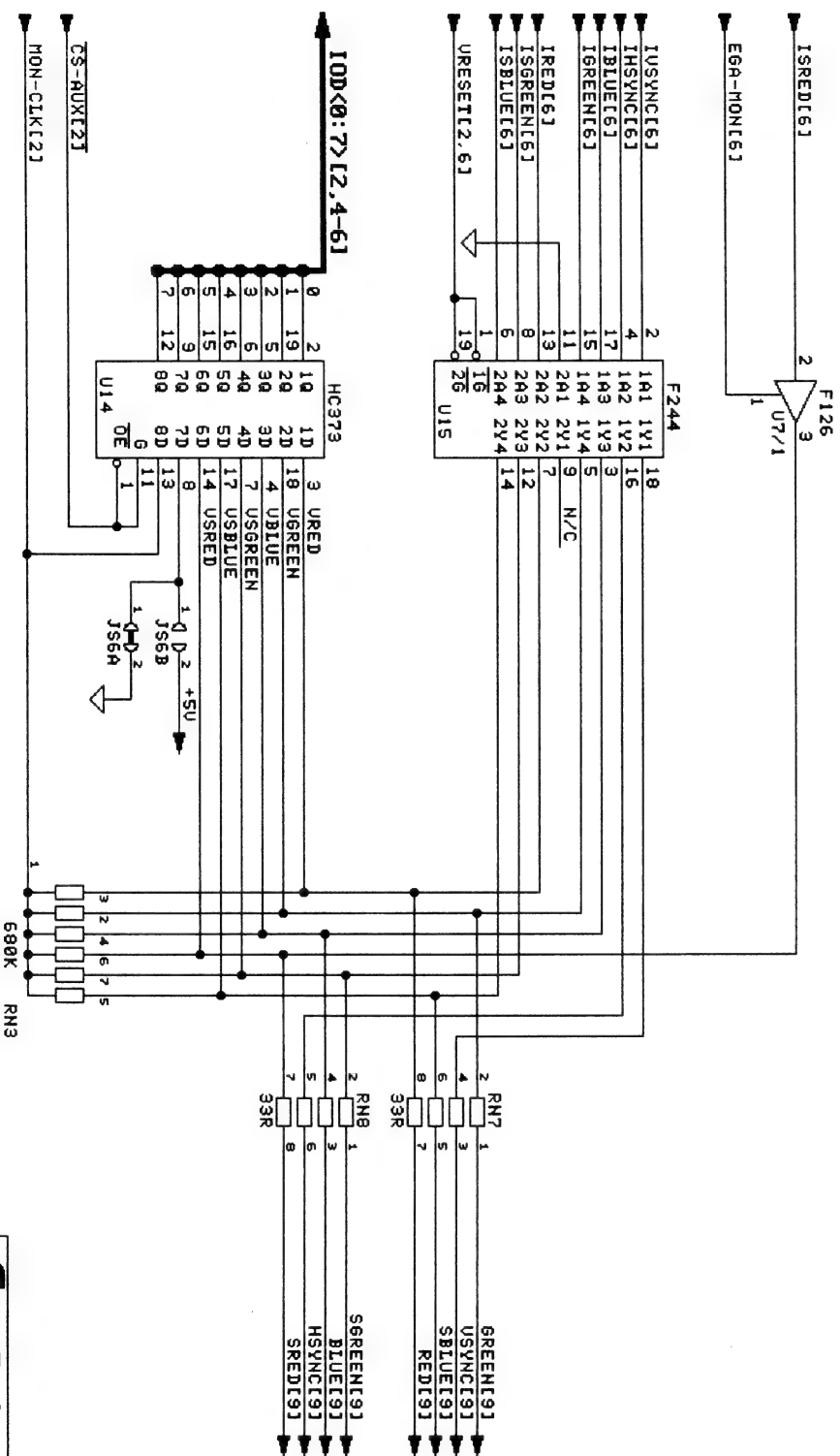
**Schneider**

DRAWN BY: H. ULRICH  
 TITLE: SCHNITTSTELLE  
 APPROVED: TUMER-EGA/10

USED ON: SIZE A3  
 TUMER-AT 50 228  
 REV 8

DATE: 11-18-88  
 SHEET: 7 of 16

# VIDEO INTERFACE



**Schneider**

T10-88

DRAWN BY:  
H. ULRICH

APPROVED:

TITLE:  
SCHEMATIC  
TOWER-EGA/10

USED ON:  
TOWER-AT

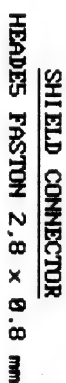
SIZE  
A3

REV  
8

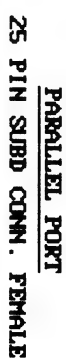
DATE: 11-18-88

SHEET: 8 OF 16

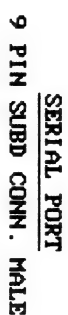
**CURRENT LIMITING PTC**      **HEADER DUAL ROM 2x5 PIN**



1  
SHIELD

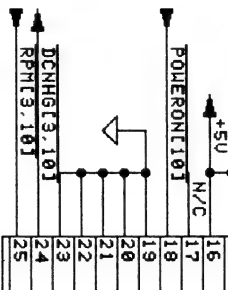


## 9 PIN SUBD CONN. FEMALE

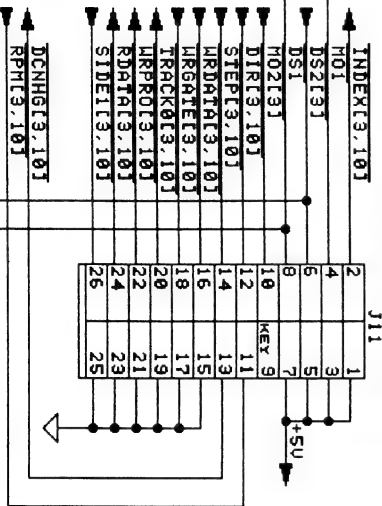


2

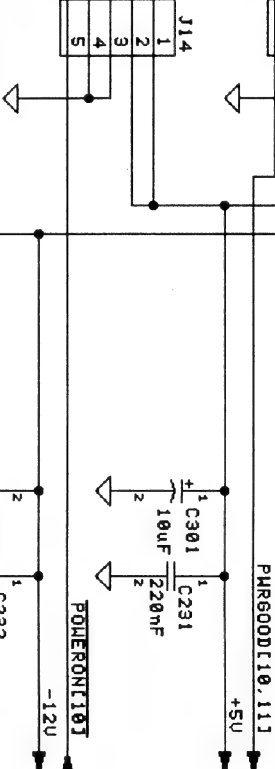
**25 PIN SUBD CONN. FEMALE**



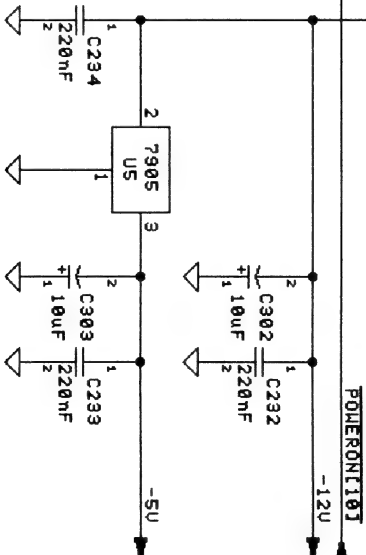
## HEADER DUAL ROM 26 PIN



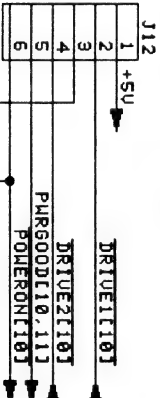
### **POWER CONNECTOR 1**



### POWER CONNECTOR 2



## LED CONNECTOR

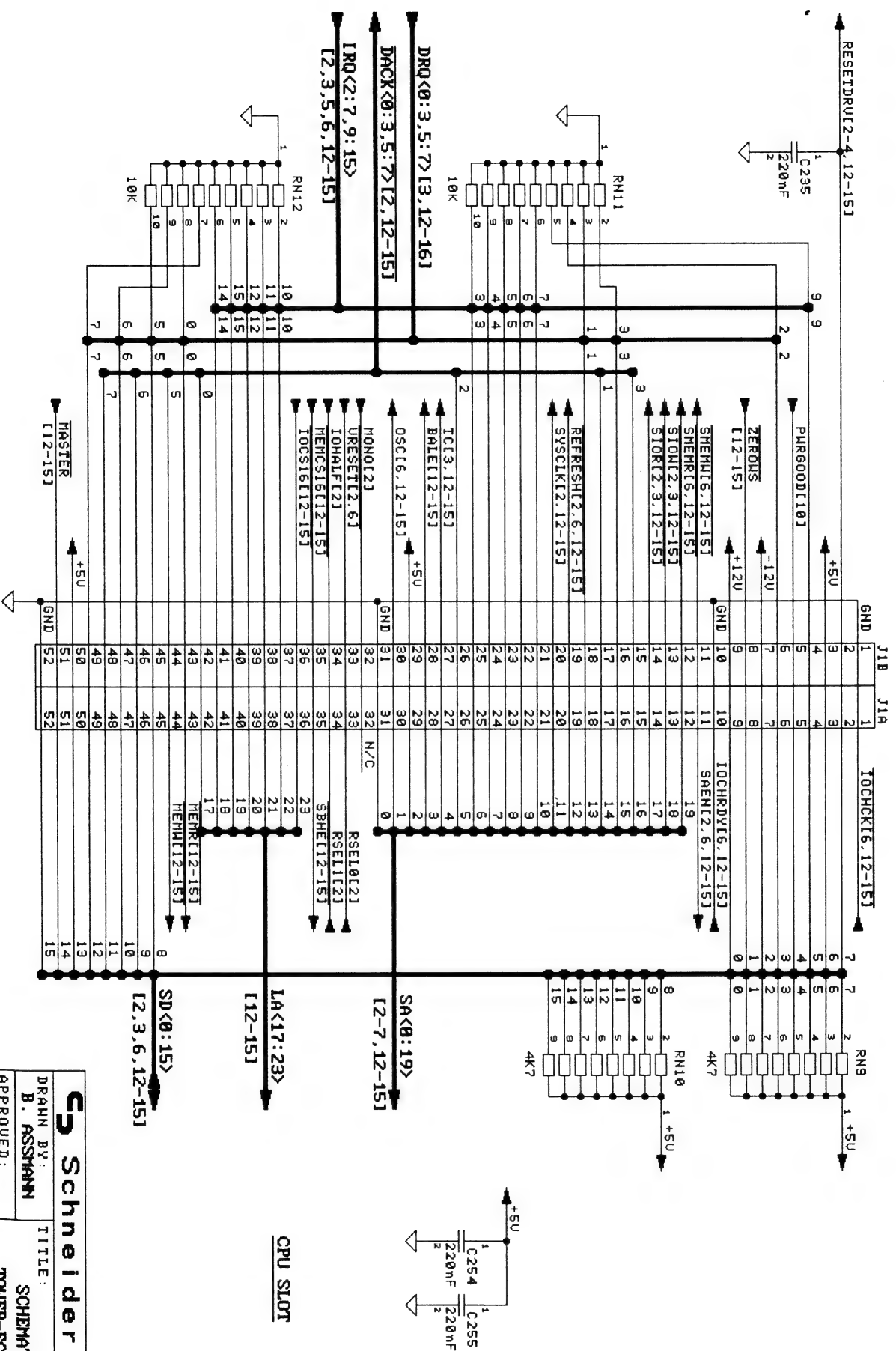


## CONNECTORS II

NOTES: 1) JS9-12 ALLOW TO PHYSICALLY

ALTER DRIVE 1 (NORMALLY INTERN) AND DRIVE 3 (NORMALLY EXTERN) E.6 TO ALLOW BOOTING FROM EXTERNAL 5.25" 1.2MB DRIVE. IN THIS CASE J59-12 A JUMPERS MUST BE CUT AND J59-12 B JUMPERS MUST BE CLOSED.

**meider**  
**TITLE:**  
SCHEMATIC  
TUNER-EGA/10



**Schneider**

DRAWN BY:  
B. ASSMANN

APPROVED:

TITLE:  
SCHEMATIC  
TOWER-EGA/10

USED ON:  
TOWER-AT

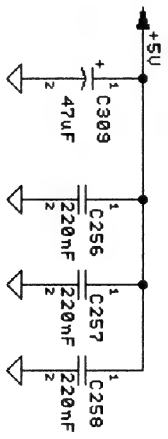
SIZE  
A3

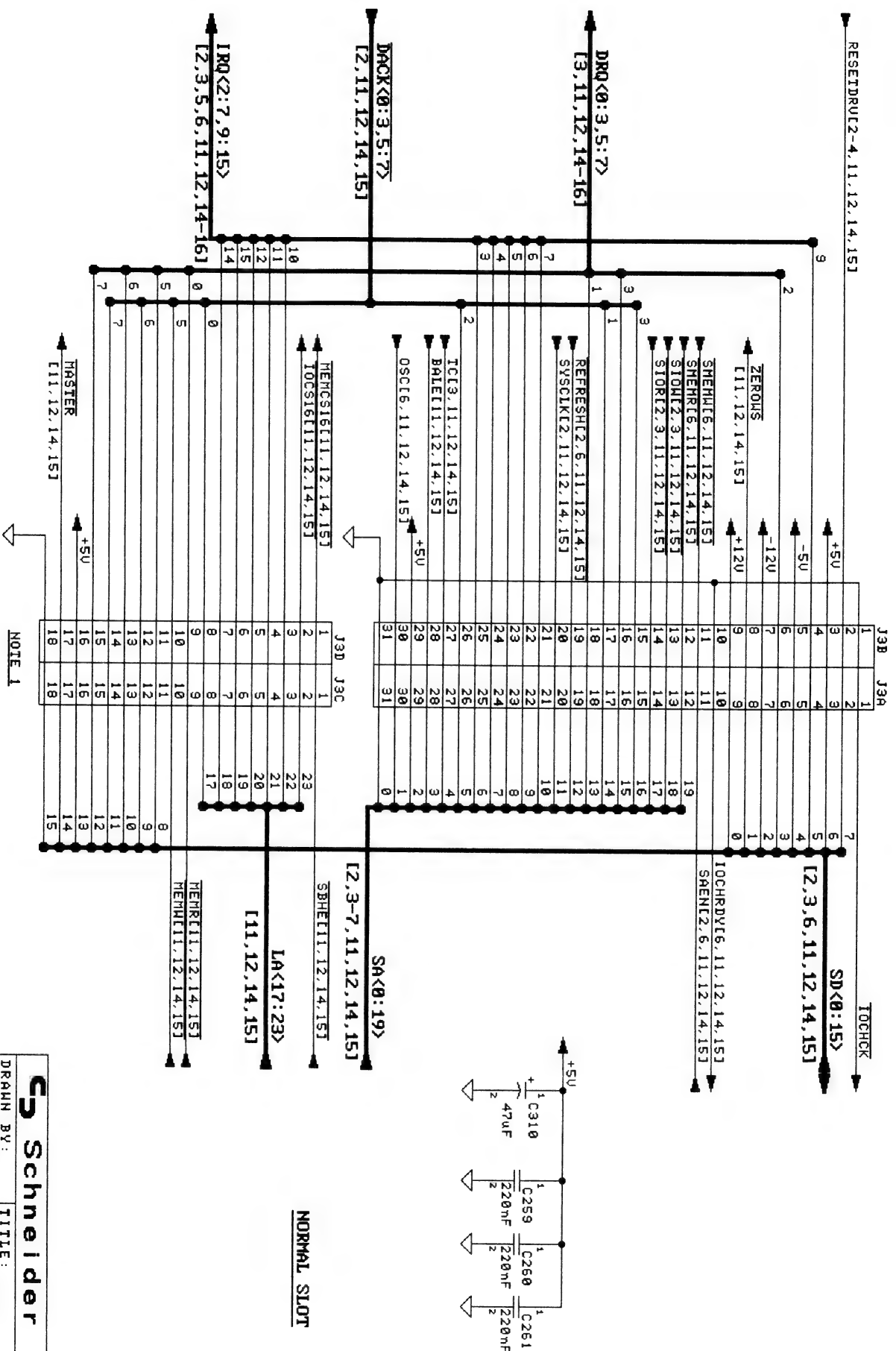
REV  
8

DATE: 11-18-88


SHEET: 11 of 16

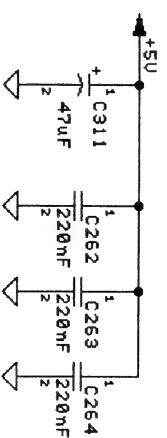


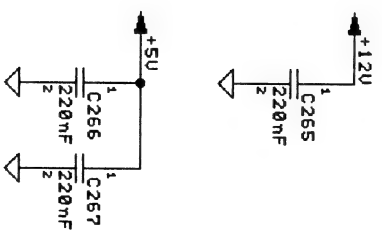
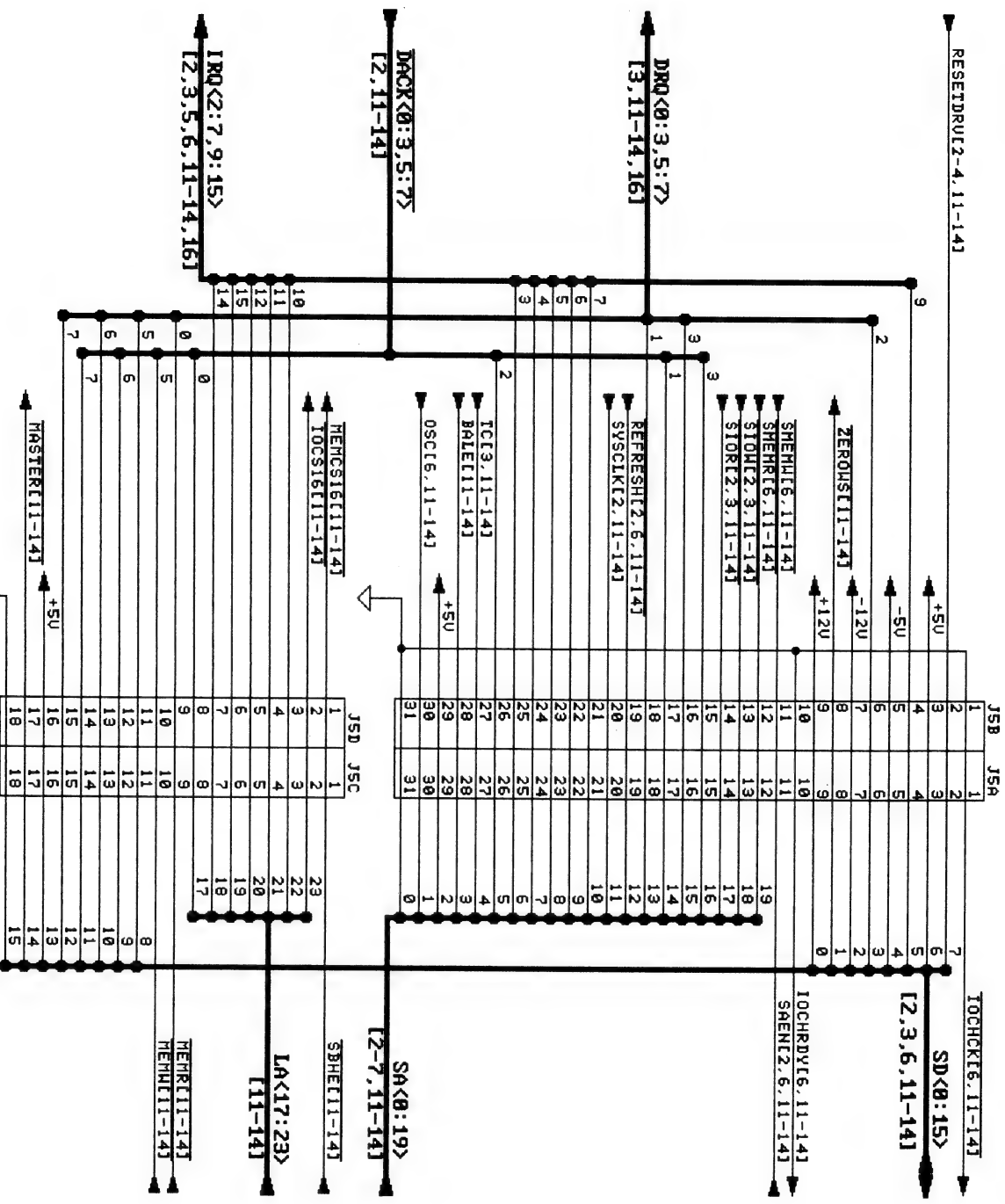




NOTES: 1) CARDEGE CONNECTOR J3C-D NOT ASSEMBLED

 <b>Schneider</b>					TIO-813
DRAWN BY: <b>H. ULLRICH</b>		TITLE: <b>SCHEMATIC</b>			
APPROVED:		<b>TOMER-EGA/10</b>			
USED ON: <b>TOMER-AT</b>		SIZE <b>A3</b>	<b>50 228</b>	REV <b>8</b>	
DATE: <b>11-18-88</b>		SHEET: <b>13</b> of <b>16</b>			





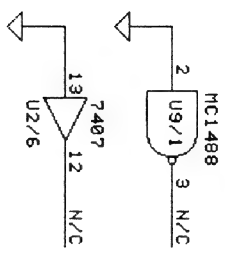
**Schneider**

DRAWN BY: H. ULRICH  
 TITLE: SCHEMATIC  
 APPROVED: TOWER-EGA/10

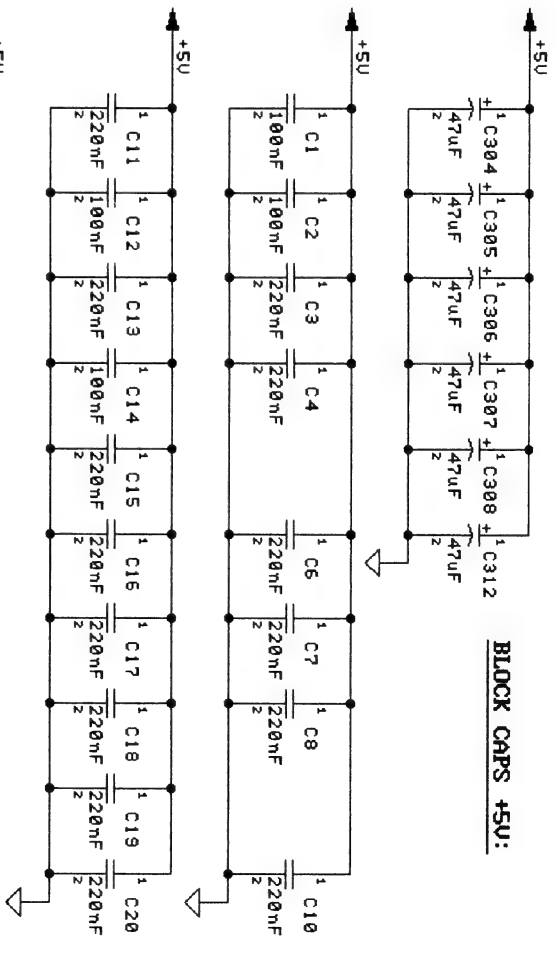
USED ON: TOWER-AT  
 SIZE: A3  
 50 228  
 REV: 8

DATE: 11-18-88  
 SHEET: 15 of 16

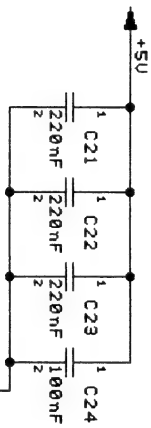
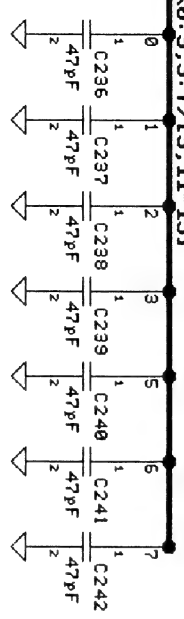
SPARE GATES



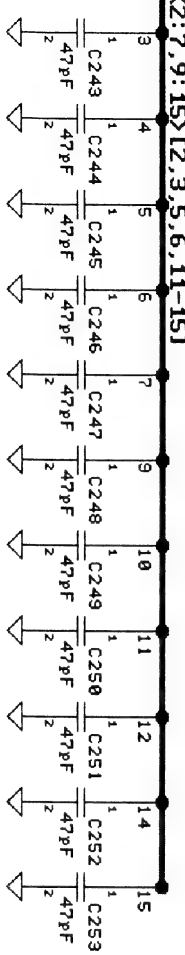
BLOCK CAPS +5V:



DRQ<0:3,5:7>[3,11-15]



IRQ<2:7,9:15>[2,3,5,6,11-15]



**Schneider**

DRAWN BY:  
B. ASSMANN

APPROVED:

TITLE:  
SCHEMATIC  
TOWER-EGA/10

USED ON:

TOWER-AT

SIZE  
A3

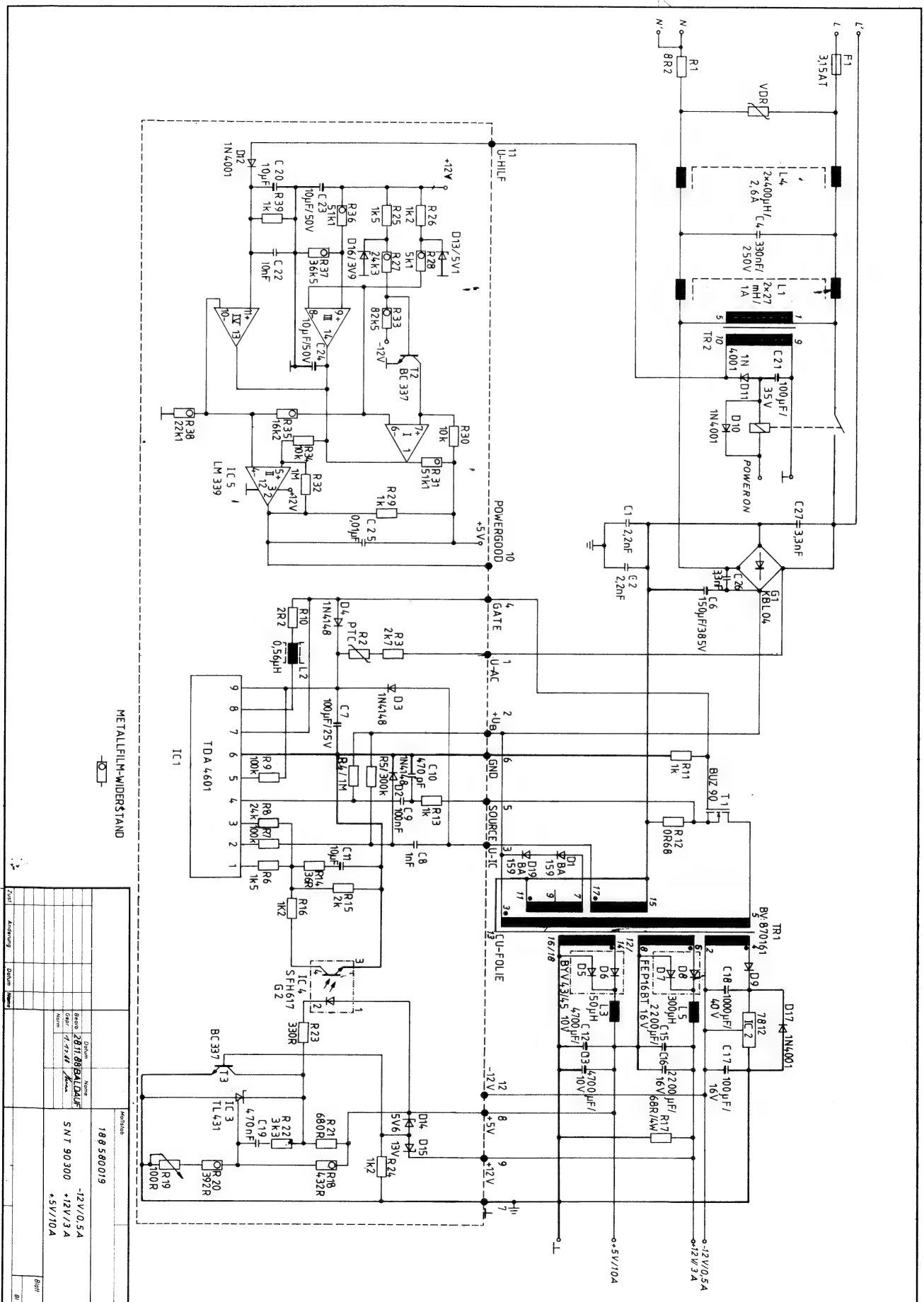
50 228

REV  
8

DATE: 11-10-88

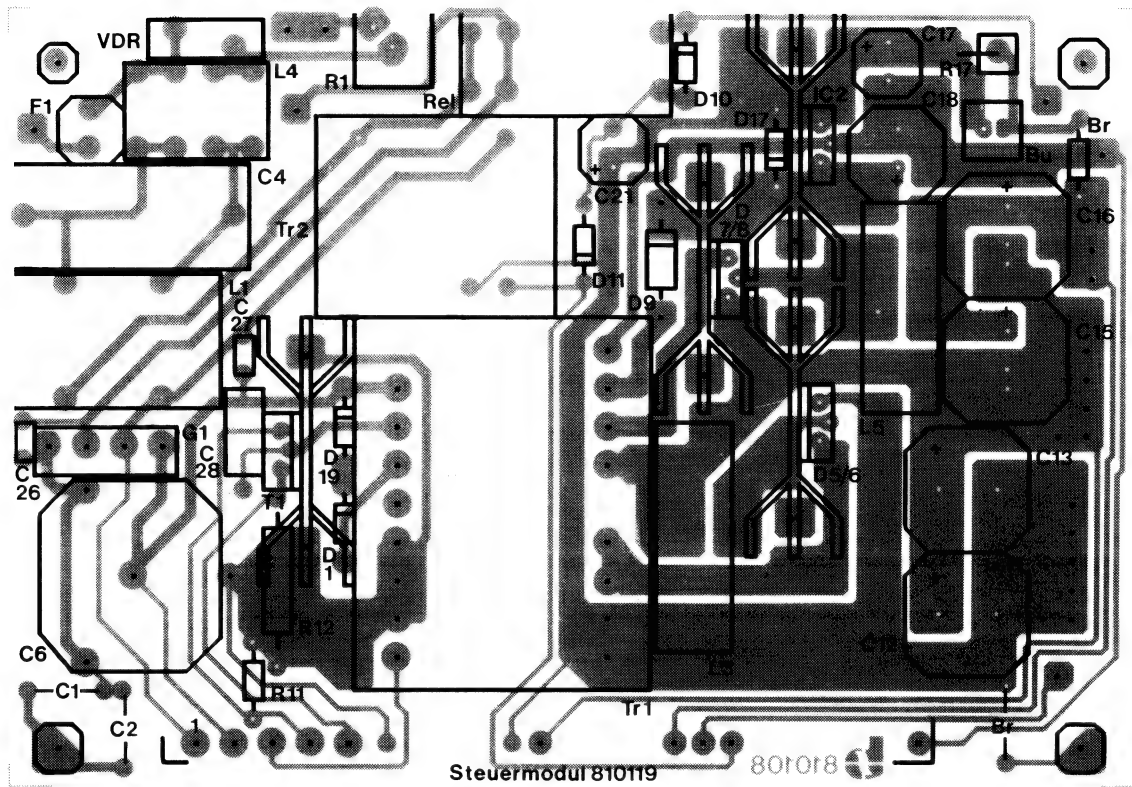
SHEET: 16 OF 16

## Power supply SCD–SNT 90/B03

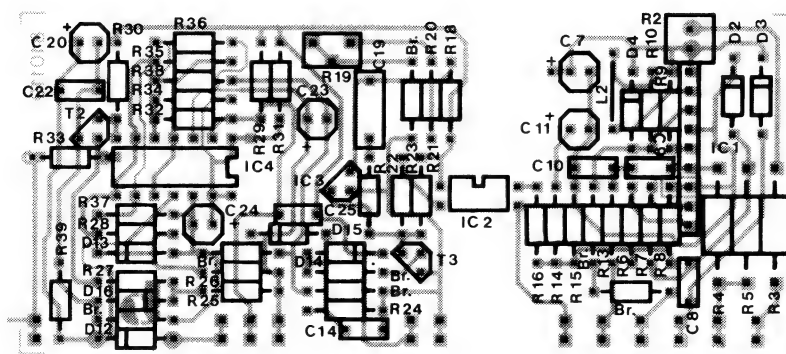


# Power supply SCD-SNT 90/B03

## Component side



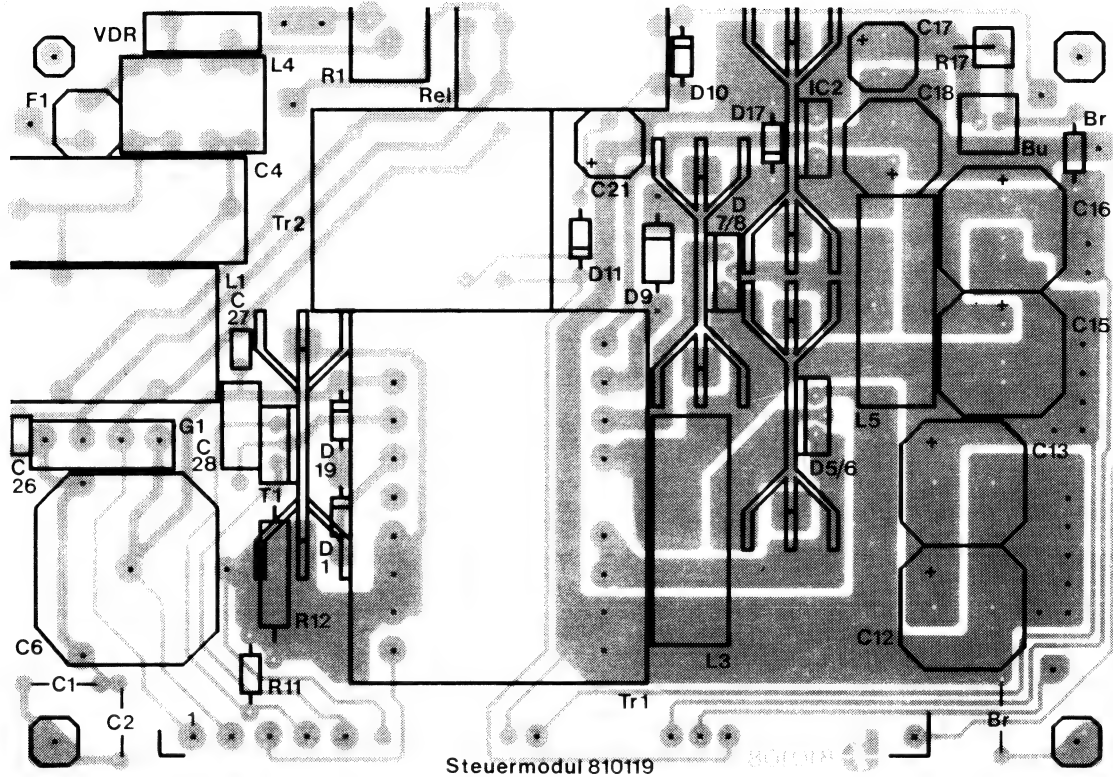
Schaltnetzteil „Tower“ SCD-SNT 90/01 B03 Id.580018 Ident Nr.7270-50215



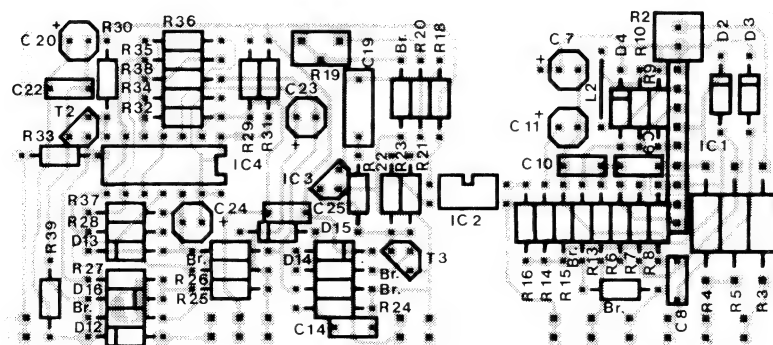
Steuermodul 810119

# Power supply SCD-SNT 90/B03

Component side



Schaltnetzteil „Tower“ SCD-SNT 90/01 B03 Id.580018 Ident Nr.7270-50215

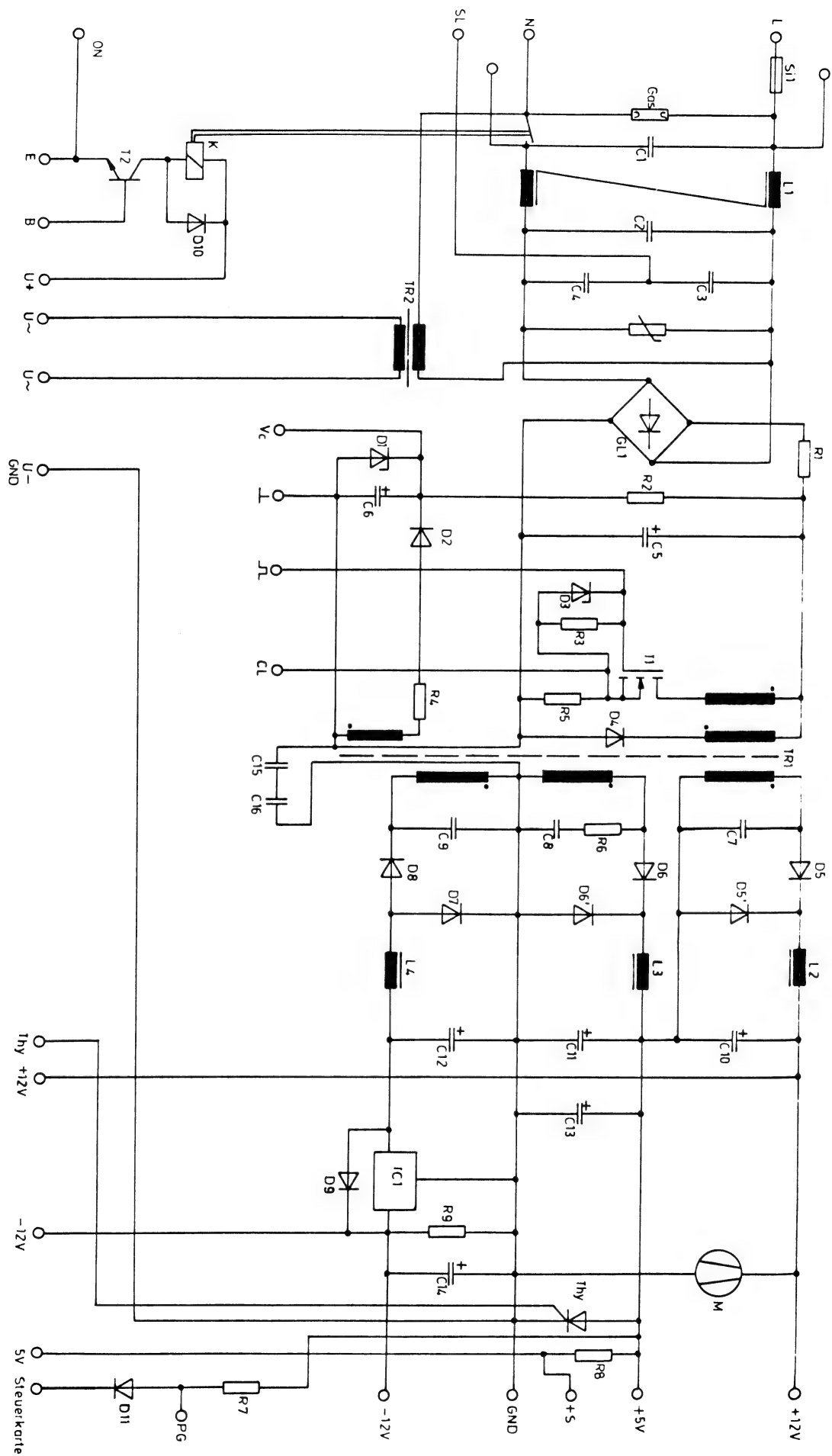




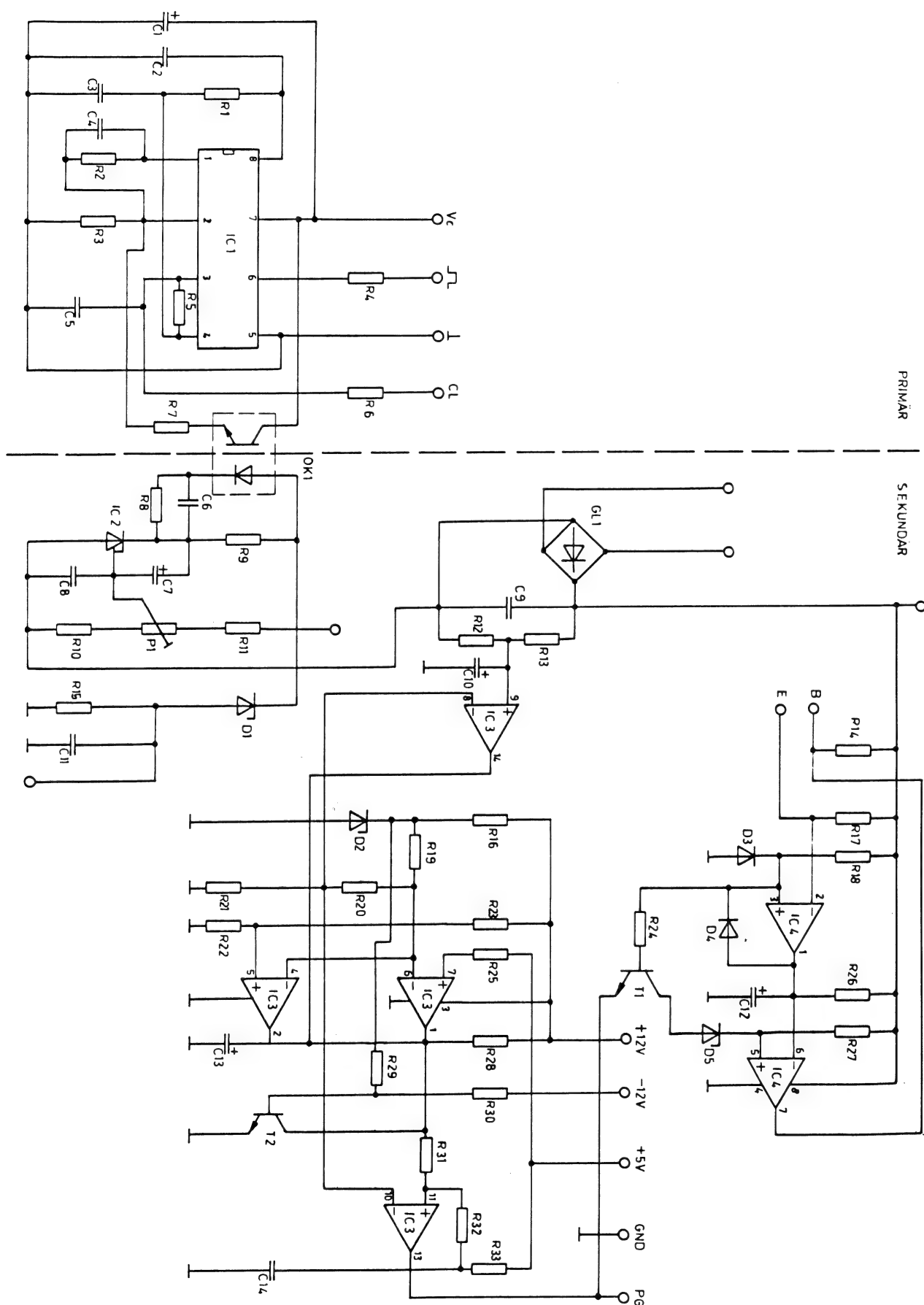
# Schematic diagram

## Power supply SCD-SNT 90/B03

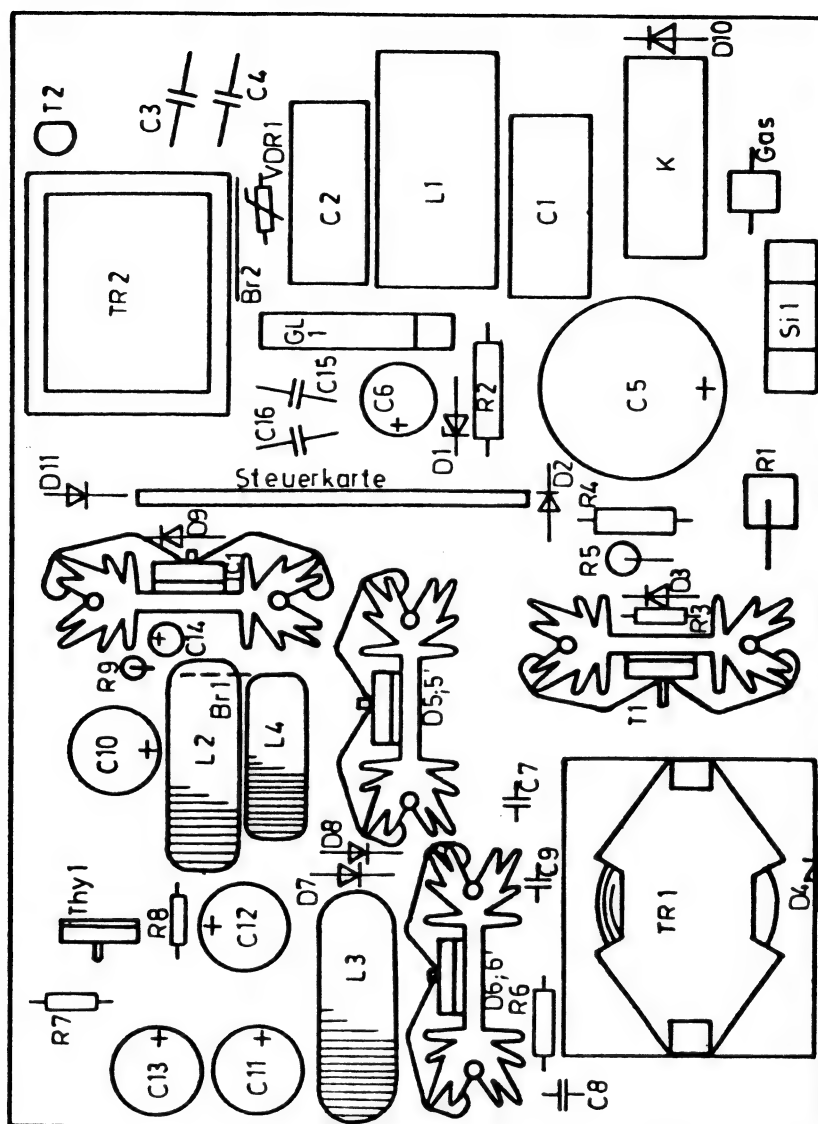
### Mainboard



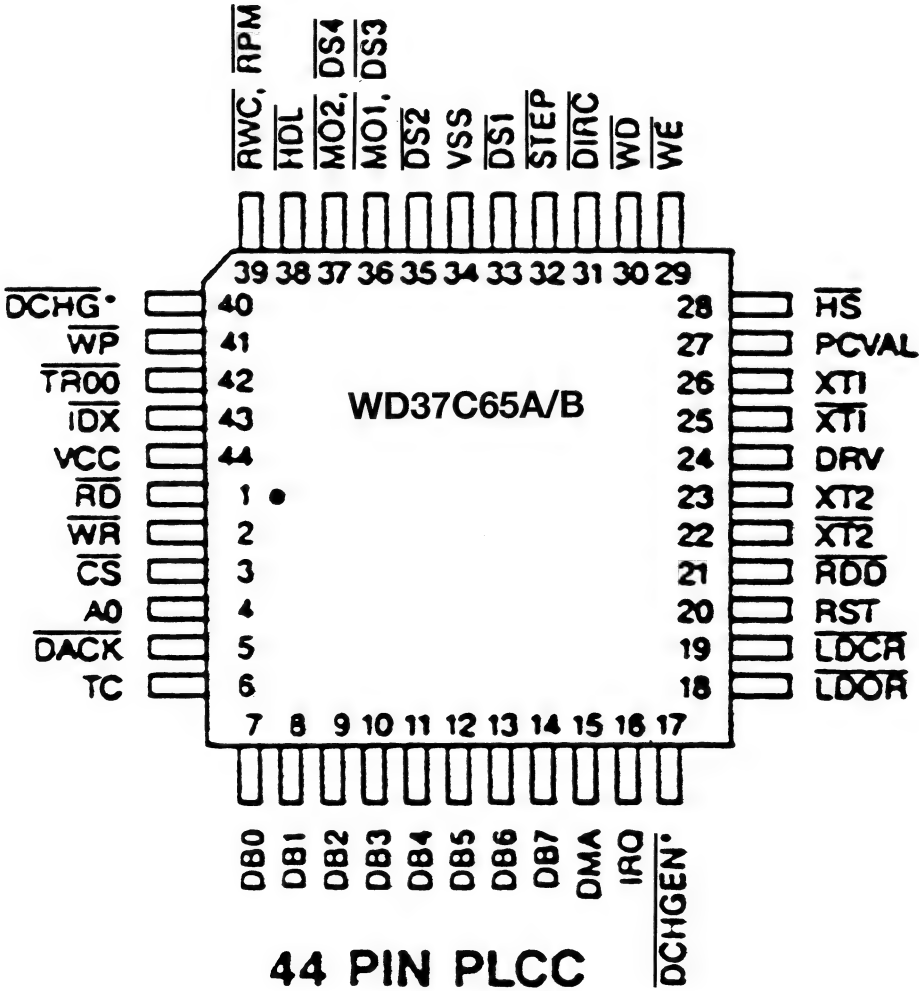
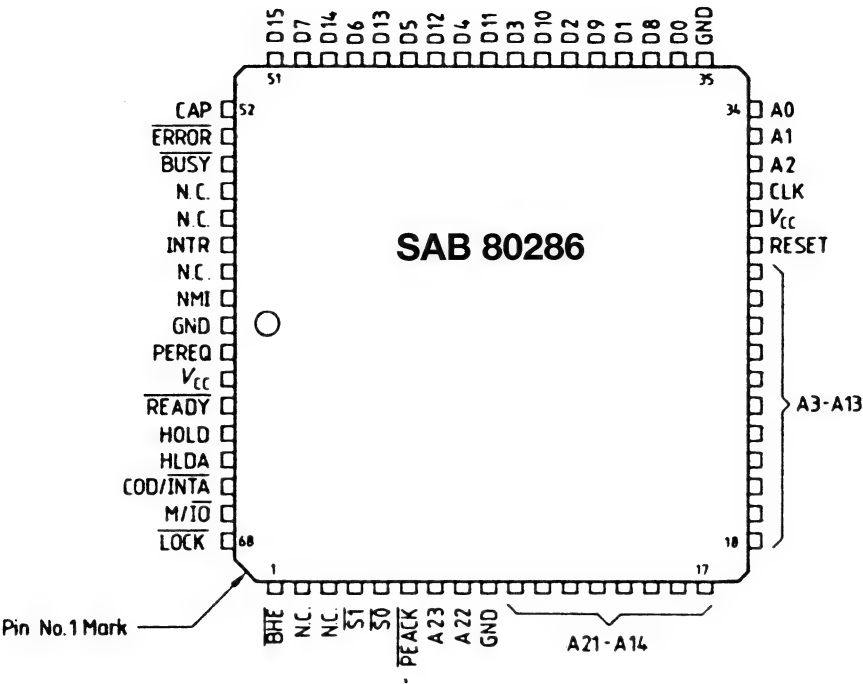
## Power supply SCD-SNT 90/E02 Controlboard



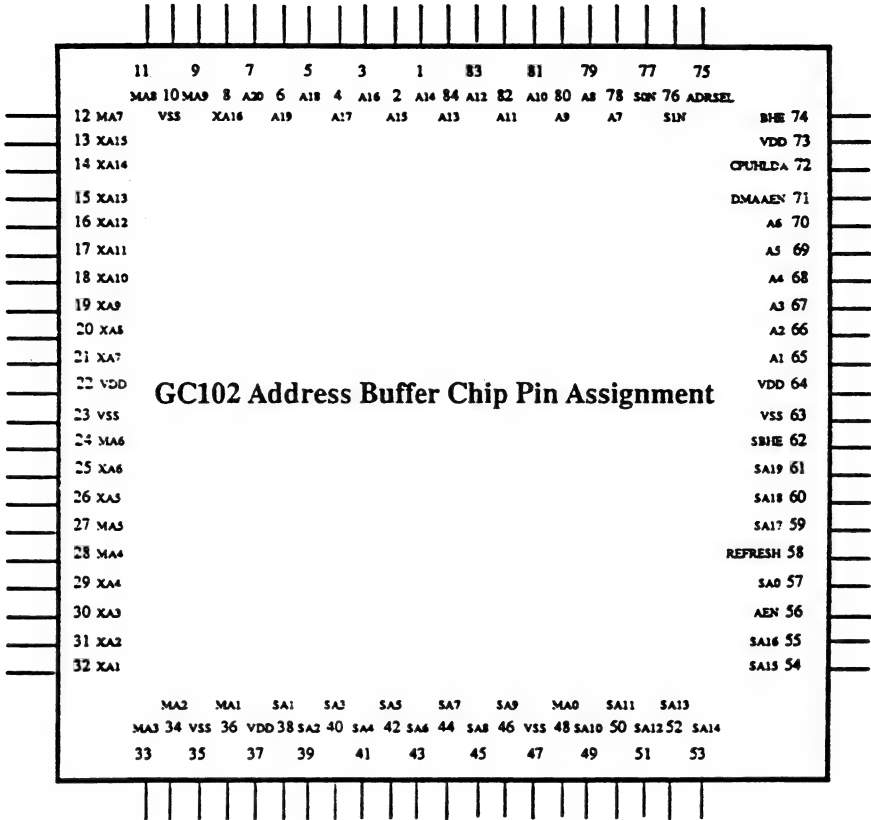
### Component side



Pin assignment



Pin assignment



Pin assignment

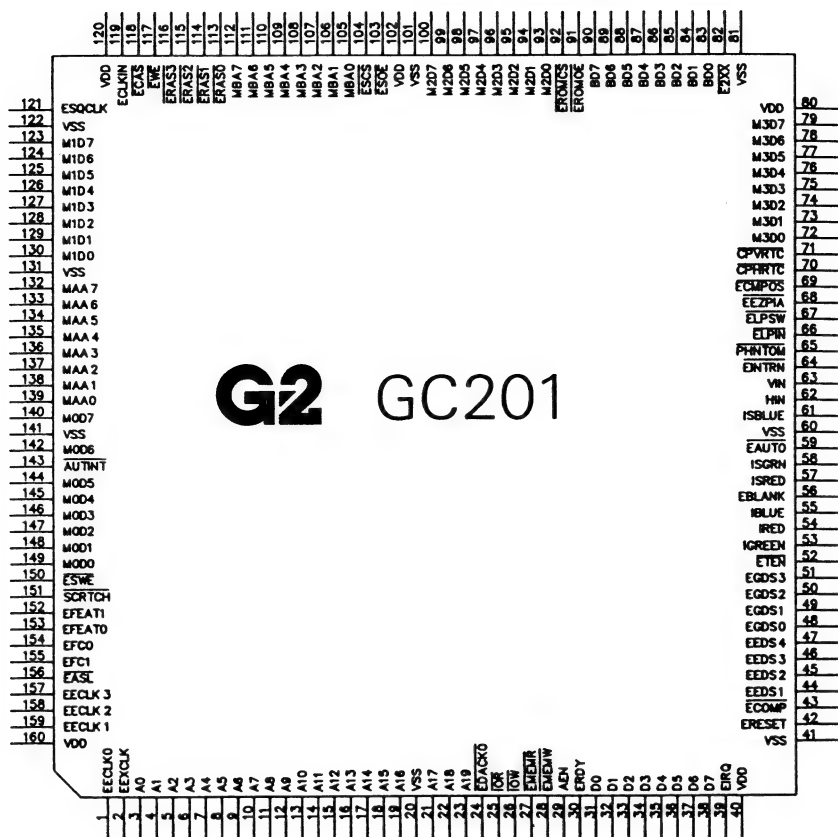
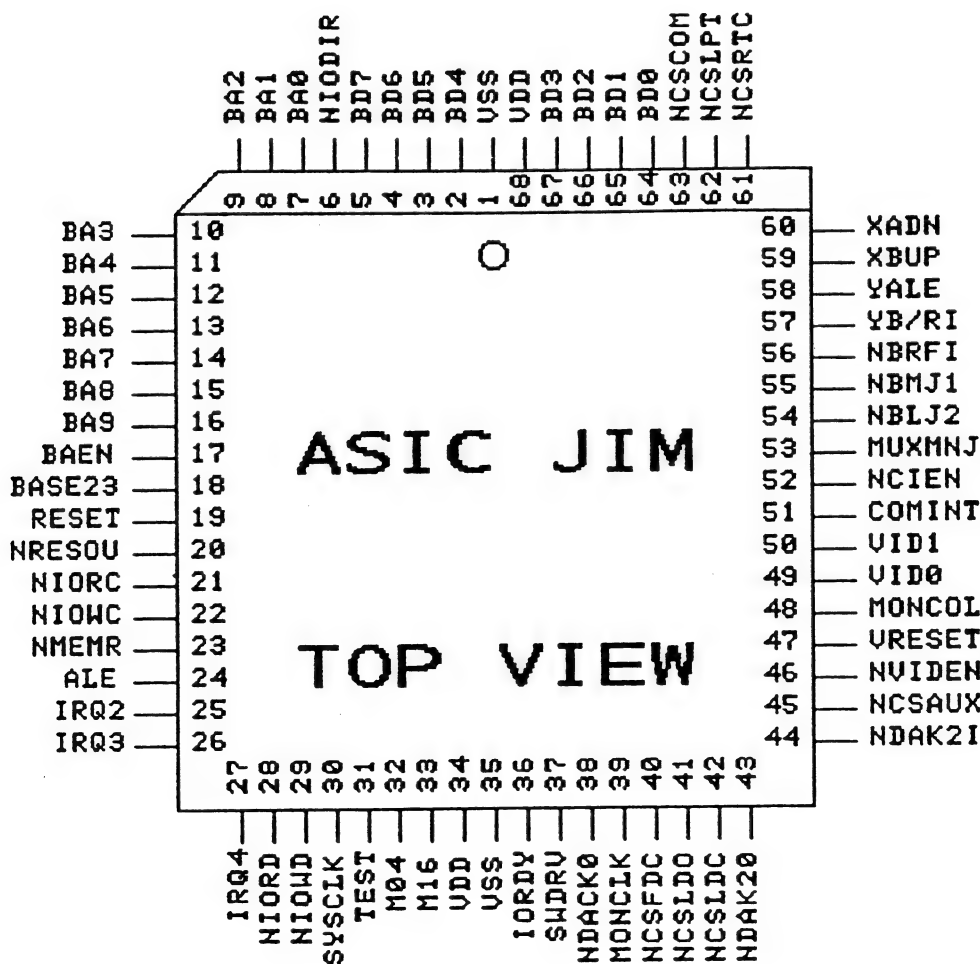
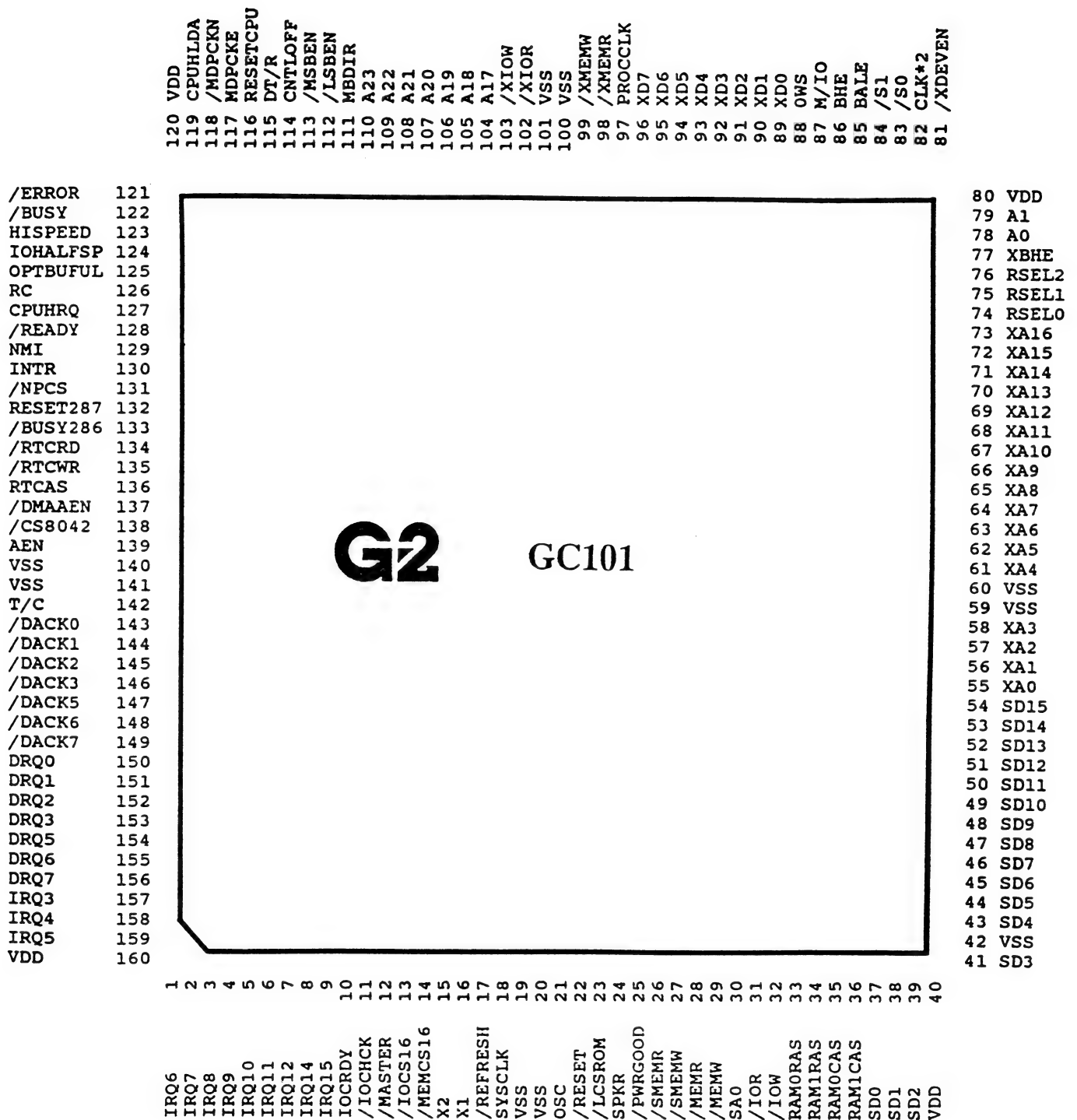


Figure 2 Pin Assignment



## Pin assignment





---

# **Appendix A:**

**Different schematics CPU Rev. 8 – Rev. 7 (Layout Rev. 3)**





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---

---

# **Appendix B:**

**Different schematics EGA I/O Rev. 8 – Rev. 7 (Layout Rev. 2 without Reworks)**

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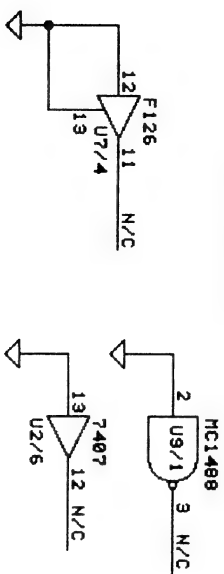


<b>CS</b>				<b>Schneider</b>	
DRAWN BY: H. ULLRICH		TITLE: SCHEMATIC TUMER-BGA/10			
APPROVED:					
USED ON: TUMER-PC		SIZE A 3	SQ 228		REV 7
DATE: 08-10-88		SHEET: 2 of 16			

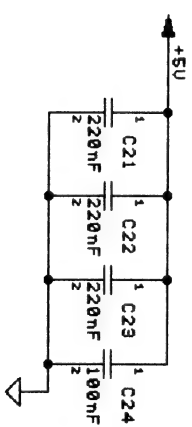
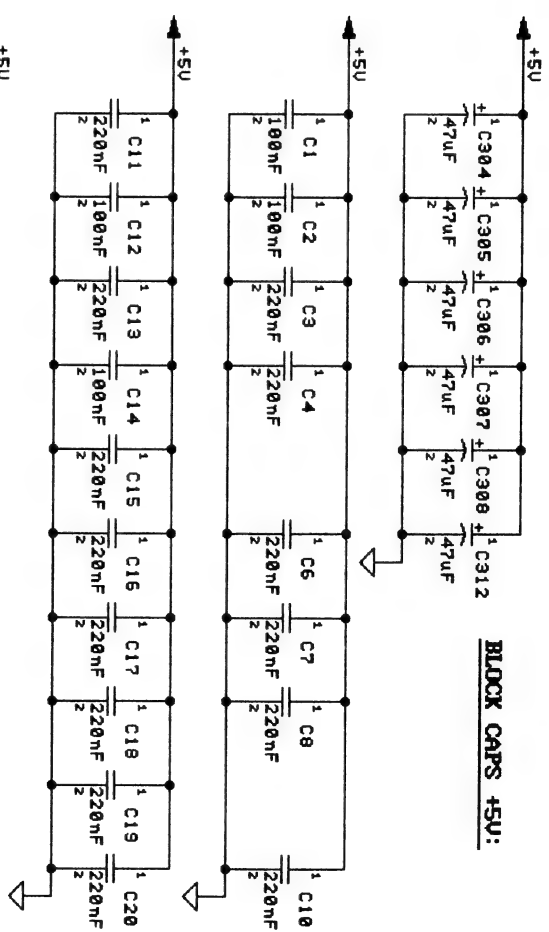




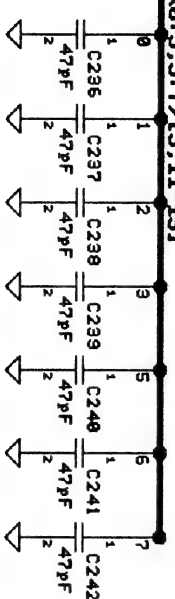
# SPARE GATES



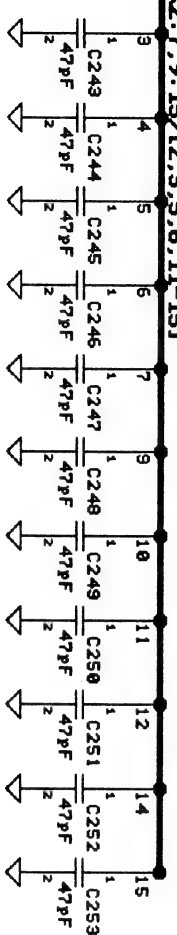
# BLOCK CAPS +5V:



# DRQ<0:3,5:7>[3,11-15]



# IRQ<2:7,9:15>[2,3,5,6,11-15]



**Schneider**

DRAWN BY:  
H. ULRICH

APPROVED:

TITLE:

SCHEMATIC  
TIMER-PC9/10

USED ON:

TIMER-PC

SIZE

A3

REV

50 228 7

DATE: 08-11-08

SHEET: 16 of 16

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# Appendix C:

**Schematics CPU Rev. 9 (Layout Rev. 5)**

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# REVISONS

LTR	DESCRIPTION	DATE	APPROVED
1	ADVANCED ENGINEERING RELEASE	05-13-88	SCHLAGE
2		05-18-88	ASSMANN
3		06-01-88	SCHLAGE
4	First Layout	06-22-88	SCHLAGE
5	Layout REV 2	08-06-88	ASSMANN
6	Layout REV 2 CORRECTIONS	08-22-88	ASSMANN
7	PCB REV 2A FIX OF BUS 'MASTER'	08-31-88	ASSMANN
8	PCB REV 4. LAYOUT: ADDITIONAL RESET LOGIC ELIMINATED	11-02-88	ULLRICH
9	PCB REV 5. LAYOUT: WITH GC 101 D	11-07-88	ASSMANN

## DRAWING FILES:

TDM_91.DWG	THIS SHEET
TDM_92.DWG	CPU SECTION
TDM_93.DWG	BIOS EPROMS
TDM_94.DWG	GC 101 D
TDM_95.DWG	KEYBOARD / CLOCKS
TDM_96.DWG	REAL TIME CLOCK
TDM_97.DWG	ADDRESS / DATA BUFFERS
TDM_98.DWG	TIMING FOR MEMORY
TDM_99.DWG	MEMORY ON SIL- MODULE
TDM_910.DWG	MEMORY ON BOARD
TDM_911.DWG	CONNECTORS
TDM_912.DWG	BLOCK CAPS

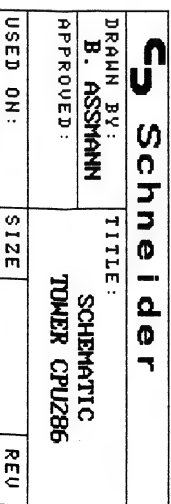
**Schneider**

DRAWN BY:  
B. ASSMANN

APPROVED:

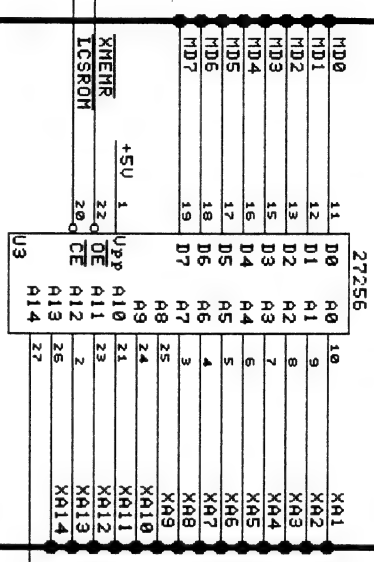
TITLE:  
SCHEMATICS  
TDMER CPU286

USED ON:	SIZE	50 229	REV
TDMER-AT	A 3		9
DATE: 11-07-88	SHEET: 1 of 12		



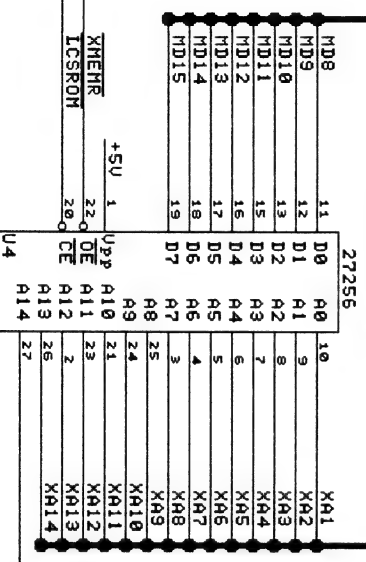
**BIOS-EPROM 0**

MD<0:15>[7,9,10]  
XA<0:15>[2,4,5,7,8]

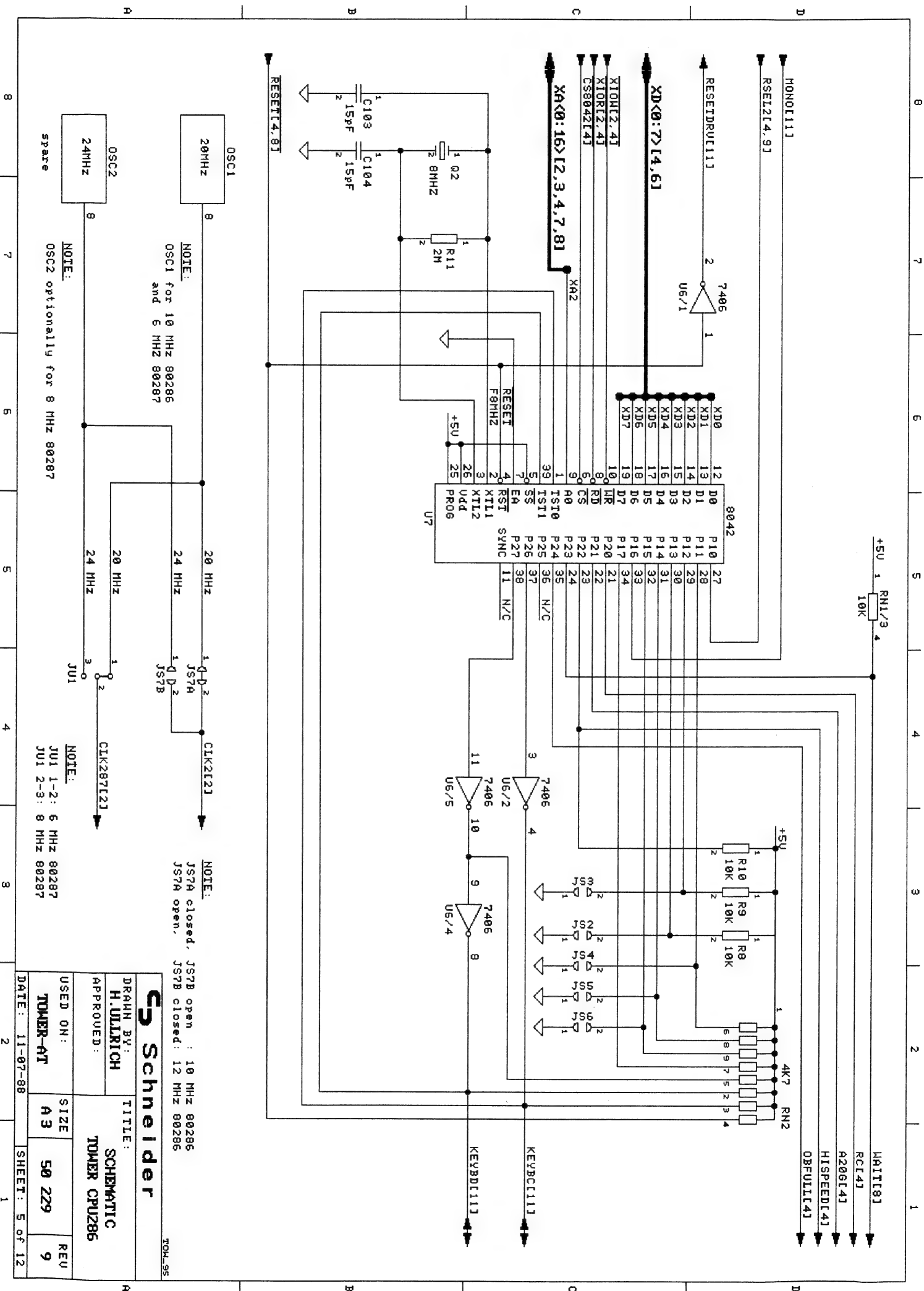


NOTE: JS1A closed, JS1B open : 27256  
JS1A open, JS1B closed : 27128

**BIOS-EPROM 1**







**Schneider**

DRAWN BY: H. ULLRICH  
APPROVED: TITLE: SCHEMATIC  
TOWER CPU286

USED ON: SIZE: 50 229 REV: 9

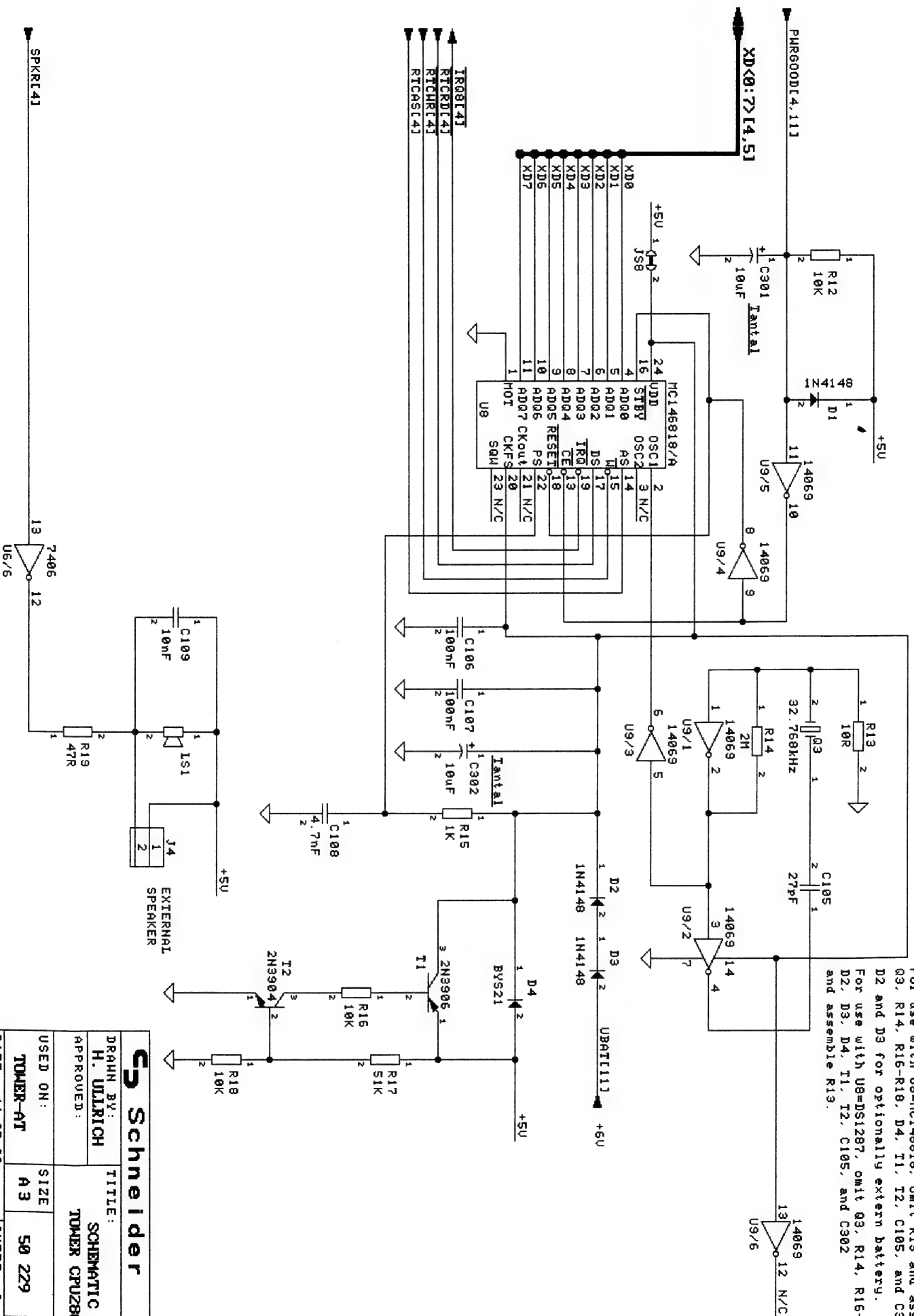
DATE: 11-07-88 SHEET: 5 of 12

NOTE: JS7A closed, JS7B open: 10 MHz 80286  
JS7A open, JS7B closed: 12 MHz 80286

NOTE: JUL 1-2: 6 MHz 80287  
JUL 2-3: 8 MHz 80287



**NOTE:**  
For use with U8=MC146818, omit R13 and assemble Q3, R14, R16-R18, D4, T1, T2, C105, and C302.  
D2 and D3 for optionally external battery.  
For use with U8=DS1287, omit Q3, R14, R16-R18, D2, D3, D4, T1, T2, C105, and C302 and assemble R13.



**Schneider**

TOM-95

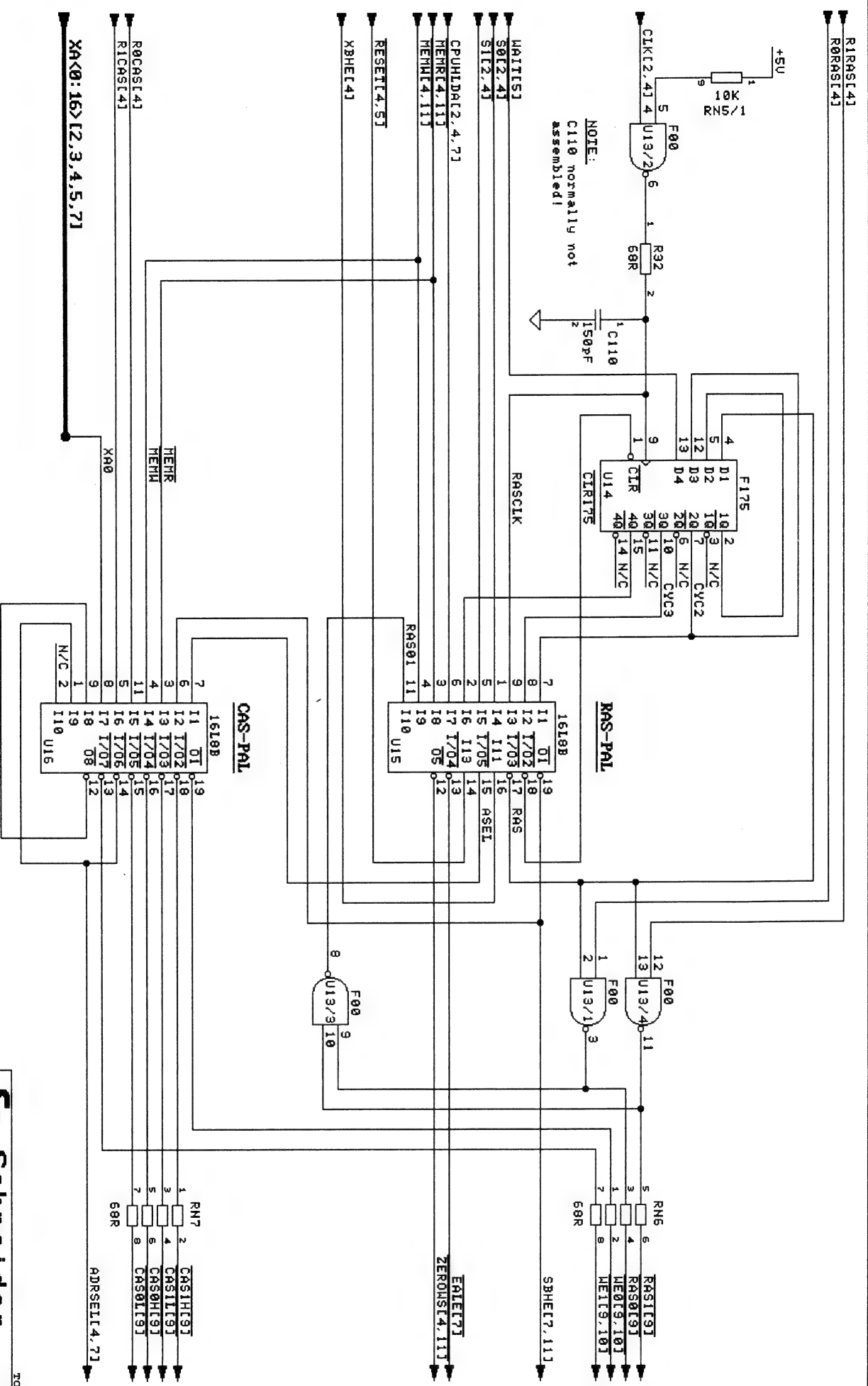
DRAWN BY: H. ULLRICH  
APPROVED: TUMER CP1286

USED ON: TUMER-AT  
DATE: 11-07-98  
SIZE: A3  
SHEET: 6 of 12

TITLE: SCHEMATIC

REV: 9



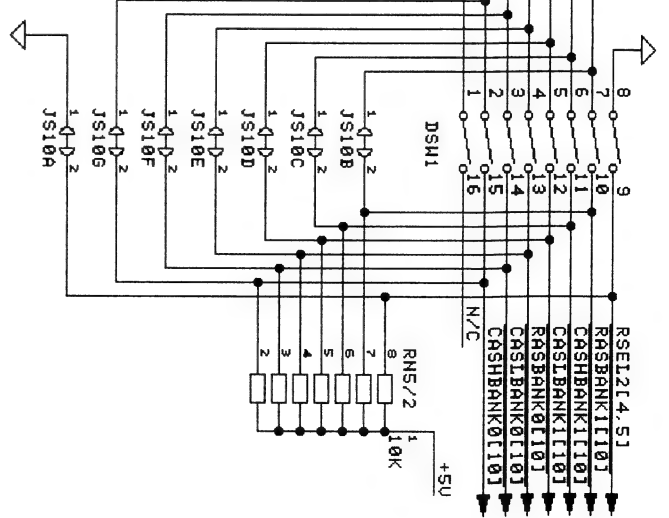
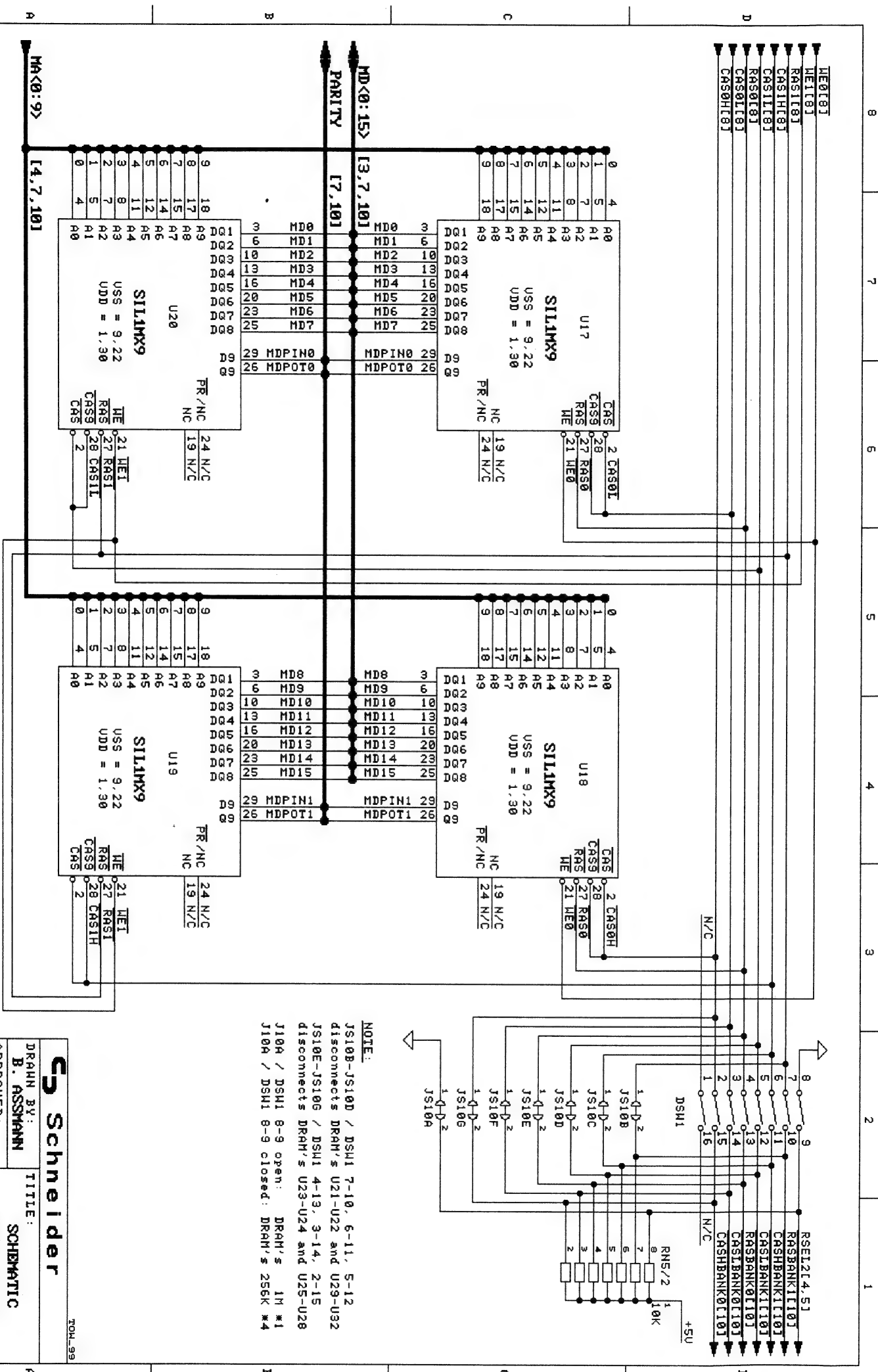


NOTE:  
C110 normally not  
assembled!

**Schneider**

TOM-98

DRAWN BY: B. ASSMANN		TITLE: SCHEMATIC TOWER CPU286	
APPROVED:			
USED ON: TOWER-AT	SIZE A3	NO. 50 229	REV 9
DATE: 11-07-88		SHEET: 8 of 12	



**NOTE:**

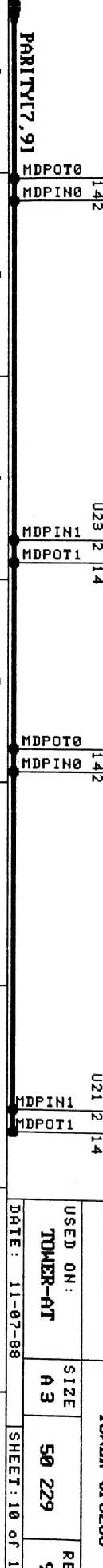
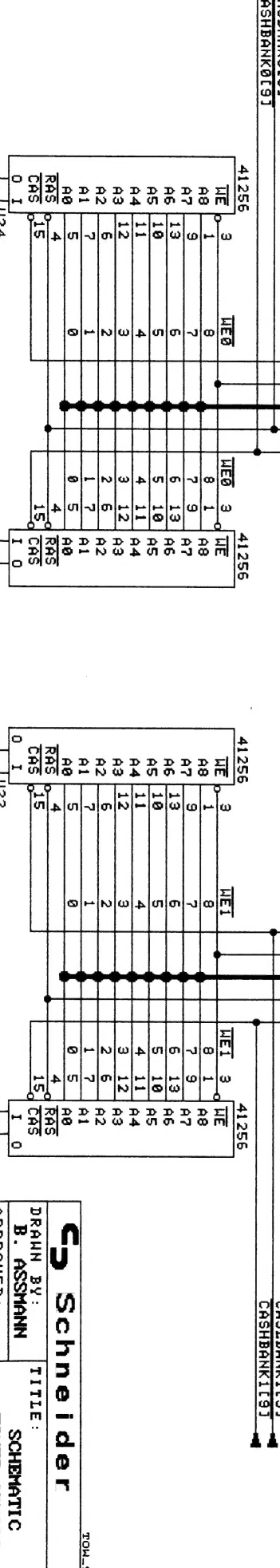
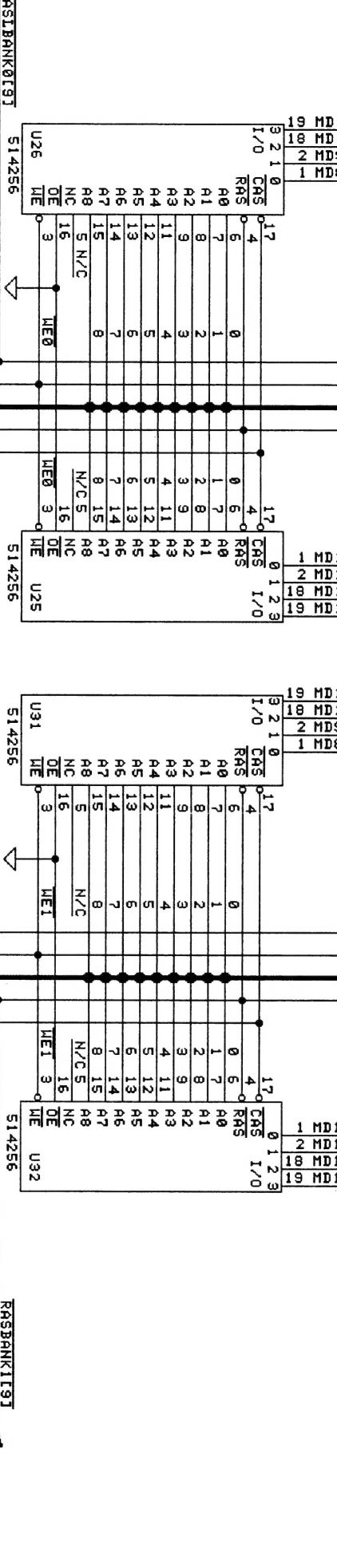
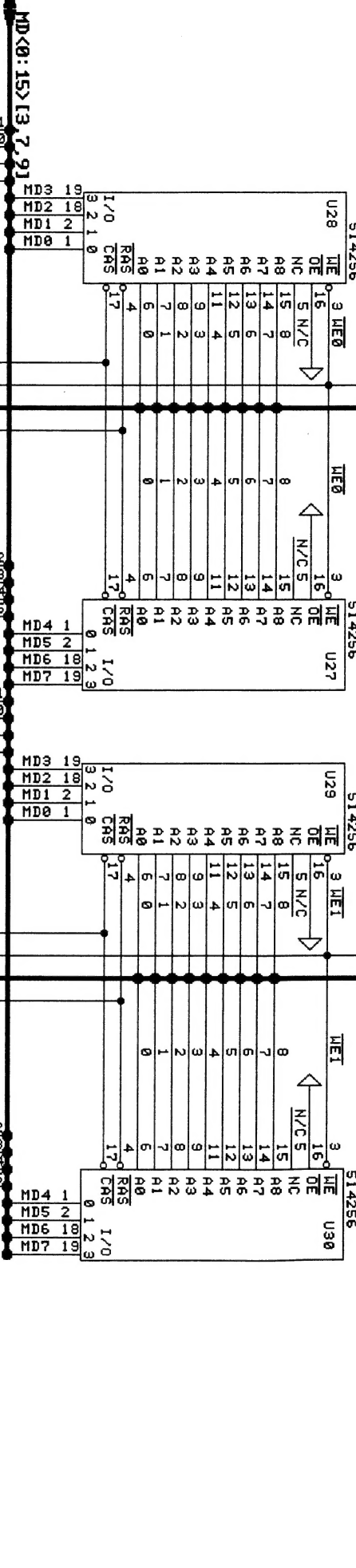
JS10B-JS10D / DSU1 7-10, 6-11, 5-12  
 disconnects DRAM's U21-U22 and U23-U24  
 JS10E-JS10G / DSU1 4-13, 3-14, 2-15  
 disconnects DRAM's U23-U24 and U25-U28  
 J104 / DSU1 8-9 open: DRAM's 1M \*1  
 J104 / DSU1 8-9 closed: DRAM's 256K \*4

**Schneider**

TON-993

DRAWN BY: B. ASSMANN  
 APPROVED:   
 TITLE: SCHEMATIC  
 TOWER CPU286  
 USED ON: TOWER-AT  
 SIZE: A3  
 SHEET: 9 of 12

MA<0:9>[7,9]  
ME0[8,9]  
ME1[8,9]



**Schneider**

DRAWN BY: B. ASSMANN  
APPROVED: \_\_\_\_\_

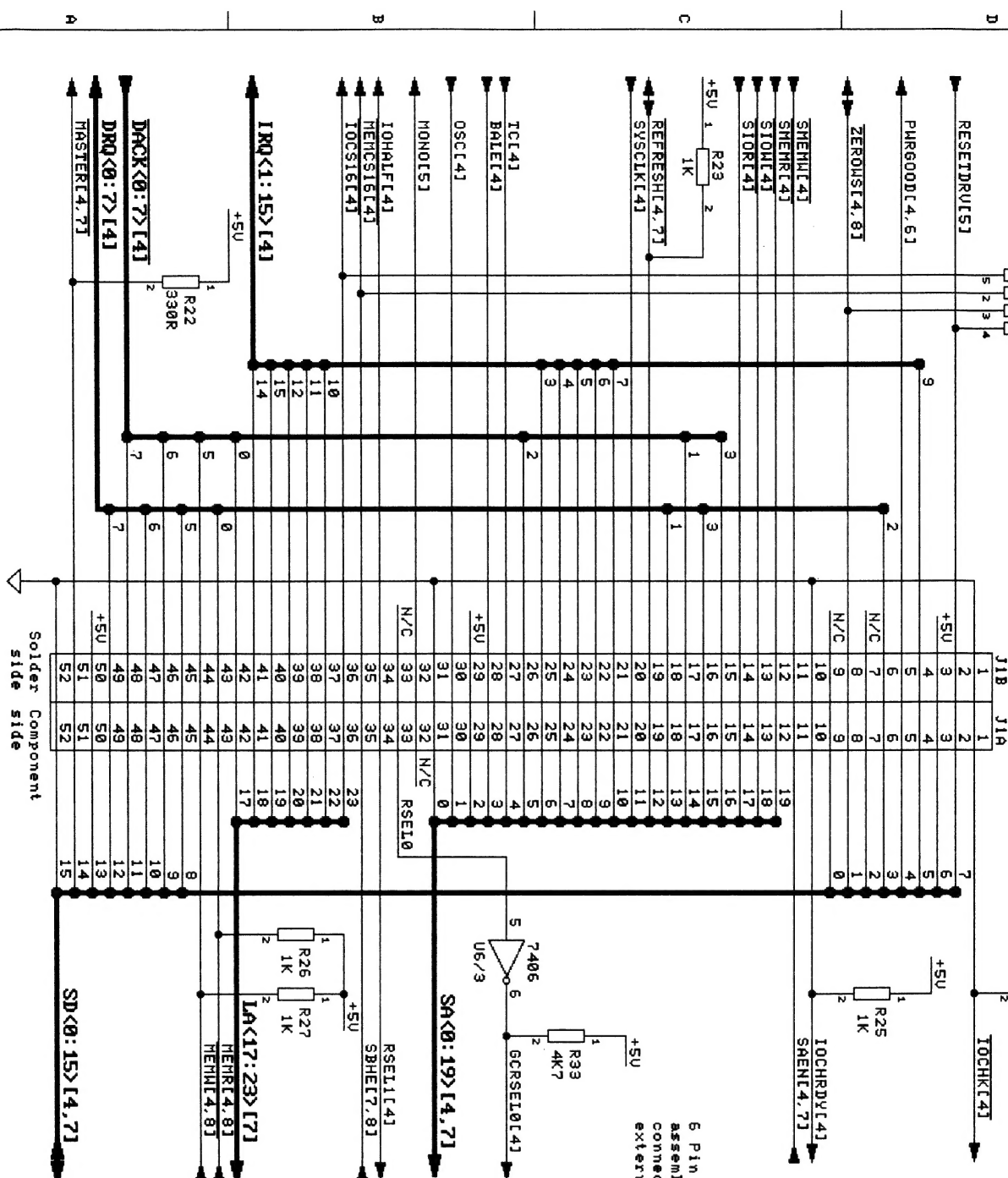
TITLE: SCHEMATIC  
TOWER CPU286

USED ON: TOWER-AT  
DATE: 11-07-88

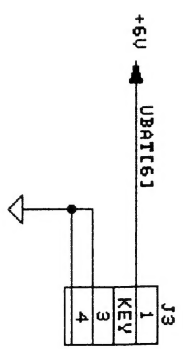
SIZE: A3  
SHEET: 10 of 12

REV: 9

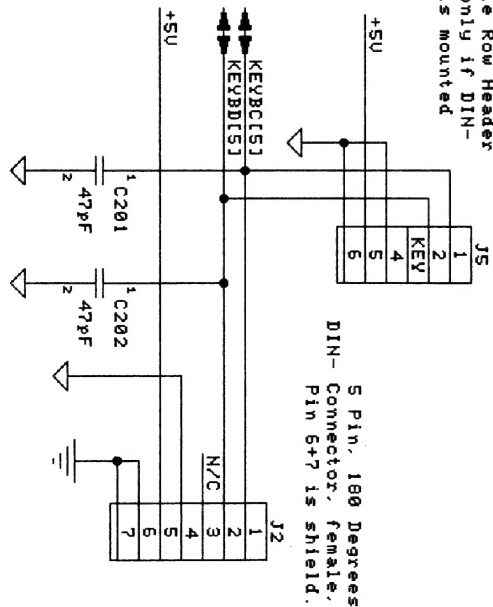
# AT - Bus, 104 Pin Card Edge Connector



## Battery- Connector +6V Single Row 4 Pin Header



## Keyboard- Connector

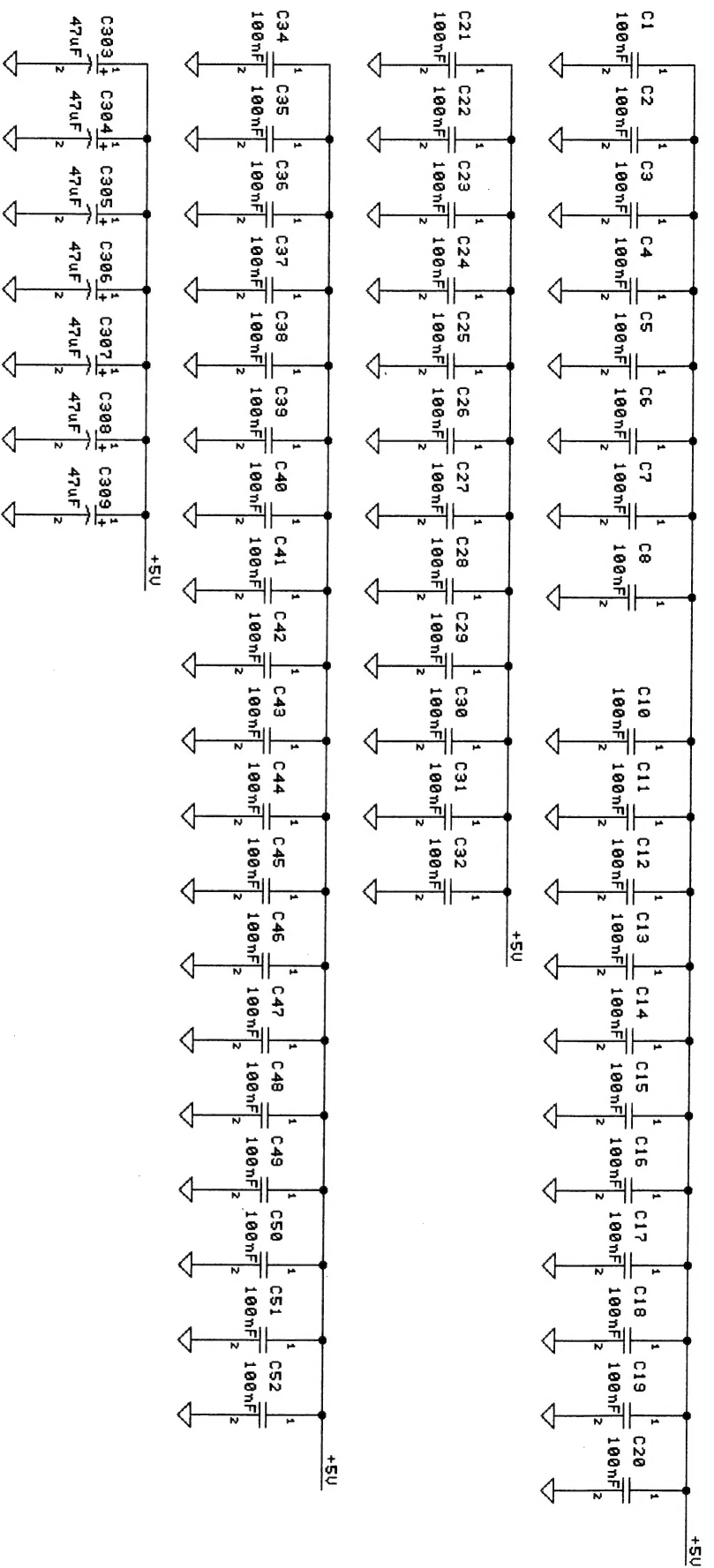


**Schneider**

DRAWN BY: H. ULLMICH  
APPROVED: TOMEI CPU286

USED ON: TOMEI-AT  
SIZE: A3  
50 229  
REV: 9

DATE: 11-07-88 SHEET: 11 of 12



**Schneider**

TON-912

DRAWN BY:

B. ASSMANN

TITLE:

SCHEMATIC  
TOWER CPU286

APPROVED:

USED ON:

TOWER-AT

SIZE

A3

REV

50 229  
9

DATE: 11-07-88

SHEET: 12 of 12

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Bitte bei Ersatzteilbestellung die genaue Bezeichnung und Ident-Nr. (siehe Typenschild) des Gerätes sowie Bestell-Nummer und Positions-Nummer des Ersatzteils angeben.

For ordering of spare parts please state exact description and ident.-no. of unit (see silver rating label on the backside of unit) as well as part no. and position no. of required spare parts.

Benutzen Sie:

Telex: 531516

oder



\* 317298 #

oder

Telefax: 08245/51326